

MARCH 1915 NO. 111

Issued Every Month

For Free Distribution to Users
of Machine Tools

HITCHCOCK'S MACHINE TOOL LIST

A Reference Book for Buyers
of Iron Working Machinery

Published by
A. H. HITCHCOCK
1220-1235 Caxton Building
Chicago

Disc Grinder Information

Below we give you a list of the various pieces of Literature issued by us. All of this matter will be sent free to anyone interested in the practice of modern disc grinding.

Kindly note each different book, circular, etc., is given a number. In asking for our literature please specify the number as well as the name.

No. 10—GENERAL CATALOG

It represents the largest, most complete and reliable line of disc grinders and accessories in the world.

No. 20—PATTERNMAKERS DISC GRINDERS

Contains various types of disc grinders for Pattern Shop use; illustrations of machines in operation; information on supplies used.

No. 30—ACTUAL TESTS

This booklet gives illustrations and descriptive data on 30 different tests made on Gardner Grinders.

No. 50—SAMPLE BOOK OF ABRASIVE DISCS

Contains two-inch diameter abrasive discs of various material and grades from No. 8 to No. 120. This is a valuable reference for Superintendents and Purchasing Agents.

No. 60—ABRASIVE DISC TEST CARDS

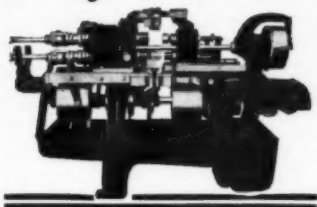
These cards are designed to assist all users of Abrasive Discs in determining just what make, grade and kind of disc is best suited to their work. Instructions on the proper method of making such a test, are included.

Our supply of Booklet No. 40, Abrasive Discs and How to Use Them, is at present entirely exhausted. We are, however, preparing another edition which will be ready for distribution at an early date. Should you be needing specific information on this subject kindly make your wants known and we will see to it that you receive by return mail the necessary data.

*Any or all of the above pieces of Gardner Literature
will be sent at your request.*

Gardner Machine Co., - Beloit, Wis.

Why Rehandle Screw Machine Jobs ?



REHANDLING a piece to complete it is ancient history for many users of Acme Multiple Spindle Automatics.

Attachments for side-milling and drilling, end milling etc., take care of most special operations before the piece is cut off. And the attachments working with the regular tools do not retard the rapid Acme rate of each piece complete in **one operation.**

Contrast the cost of an extra tool and setting it up with the expense for a special machine and extra labor, time, floor space, power and upkeep—the difference is one means to a lower cost per piece on Acme Automatics.

Let us have samples of screw machine jobs that you're rehandling—or of any work up to 2¼" diam. and we'll give you Acme production figures.

Catalog 9 on request.

**THE NATIONAL-ACME
MANUFACTURING CO.**

SIXTH CLEVELAND CITY

NEW YORK-BOSTON-CHICAGO-DETROIT-ATLANTA-MONTREAL



High Speeds and Heavy Feeds

Have made the old-fashioned
cast lathe dog a back number

Armstrong Lathe Dogs

are DROP FORGED from STEEL
and treated to make them stiff and
tough. All kinds $\frac{3}{8}$ -in. to 8-in.

THE SCREWS ARE TOOL
STEEL with hardened point.

SPECIFY ARMSTRONG if you
want the best.

Catalog for the asking

Armstrong Bros. Tool Co.

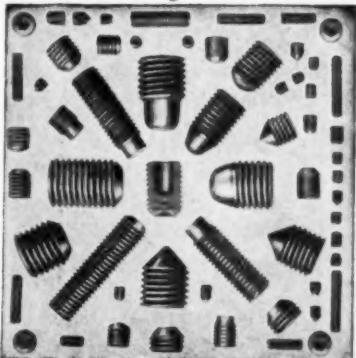
"The Tool Holder People"

308 N. Francisco Ave., Chicago, U. S. A.

Our complete line is on exhibition in Block 41, Palace of
Machinery, Panama-Pacific Exposition, San Francisco.

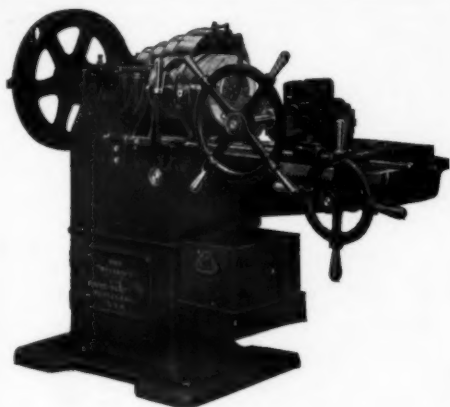


Allen Safety Set Screws



Send for circular No. 13 and sample screws (for testing).

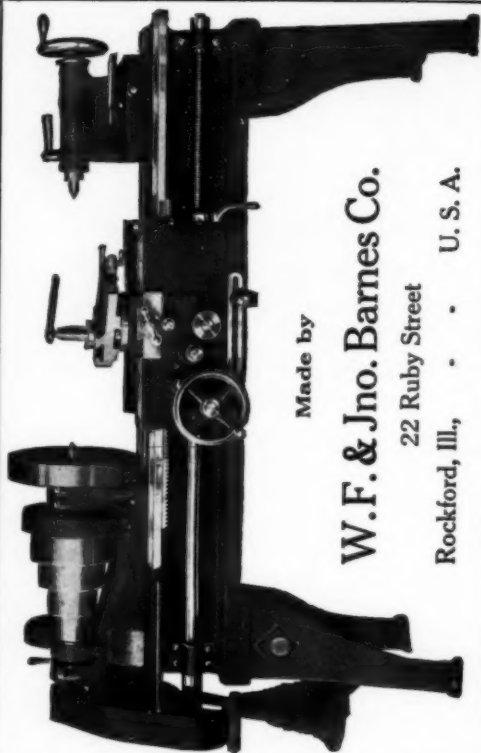
ALLEN MFG. CO., - Hartford, Conn.



Reliance Bolt Cutters

Built in sizes $\frac{3}{4}$ inch to 6 inches, Single, Double and Triple, of the most up-to-date design. There is, also, a good reason why the "Reliance" is such a satisfactory machine for accuracy of threads cut, large production and low cost of maintenance, even in the hands of inexperienced labor. A lot of this reason is in the Opening Die Head, and we would like to tell you all about it. Interesting information for the asking.

The Foote-Burt Co., Makers
Cleveland, Ohio



Made by

W.F. & Jno. Barnes Co.

22 Ruby Street

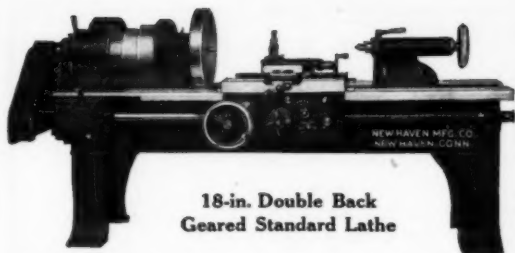
Rockford, Ill., . . U. S. A.

Barnes 18-Inch Lathe

Moderate Price 1 $\frac{1}{2}$ -inch Hole in Spindle

4 instant changes feed in carriage. Made in 6, 8 & 10 ft. beds

Send for Circular



**18-in. Double Back
Geared Standard Lathe**

"New Havens"

**Are Moderate in Price for Quality
Are High in Quality for the Price**

And there's a reason.

A lathe is a collection of parts, made to fit together in a complete machine for the purpose of performing certain work.

Every part is a problem in itself, not only in the quality of that part but in its relation to other parts and to the machine as a whole.

Our experience of over 60 years has given us a practical knowledge of lathe detail that only long experience can teach, so that "New Havens" are properly built "from the ground up"—not a weak spot to cause trouble in practical operation on exacting work.

In design they are strictly modern—possibly a little more than modern, for they are built to meet present shop requirements and to anticipate future needs so far as we can foresee them.

And our organization for economical manufacture—another result of long experience in lathe building—insures to our customers a very moderate price for the sterling qualities to be found in New Haven Lathes.

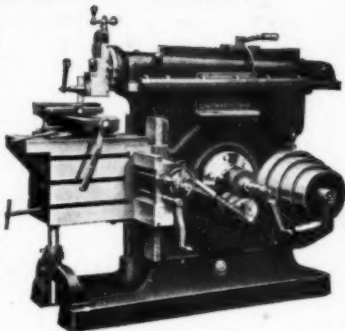
*18-in. to 32-in., various lengths, carried in stock
We make them up to 65-in. swing, of massive type*

New Haven Manufacturing Co.
New Haven, Conn.

SHAPERS

12", 14", 16"
Plain Crank,
16", 20", 25"
B. G. Crank,
either Cone
Driven or
through
Speed Box.

24", 28", 32"
Geared
Shapers of
the Belt Shift
type.



The Smith & Mills Co. Station B,
Cincinnati, O., U.S.A.

Davis Keyseaters

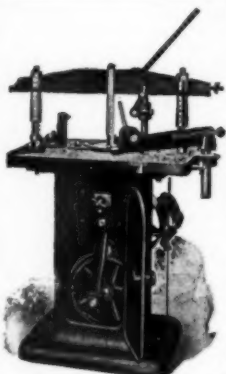
Stand for Rapid Production

They meet every requirement as a manufacturing machine and can be economically used on large and small lots. Also adapted for Slotting, Oil-grooving, cutting Keyways in Bell-cranks and similar work.

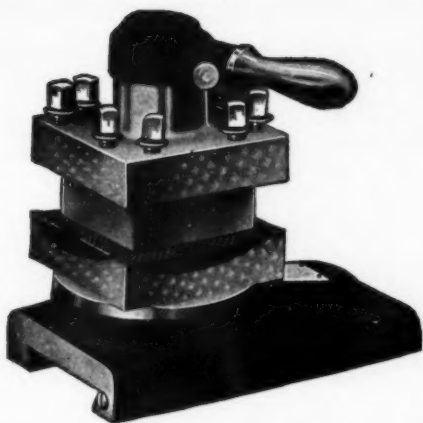
Made in two sizes:

No. 1 Capacity $\frac{1}{8}$ in. to 1 in.
No. 2 Capacity $\frac{1}{4}$ in. to $\frac{3}{8}$ in.

Write for complete information and copy Treatise on Keyseating, mailed free



The W. P. Davis Machine Co., 307 St. Paul St.,
Rochester, N. Y.



Modern Multiple-Production

With F. & S. Patented Four-Sided Tool Posts

YOU DON'T HAVE TO BUY a new machine to increase production—you can do it with our new Tool Post, and at very small cost.

No matter what make of lathe yours may be, we can transform it into a multiple-production machine. Just state the size of the dovetail on your lathe carriage and height to lathe center—we'll do the rest.

Are You Interested in Making Shrapnel?

This Tool Post is particularly adapted for its manufacture, and if you will write us we will send full details. You incur no obligation.

We have some interesting facts to submit

Fay & Scott, Dexter, Me.

In A Class By Itself

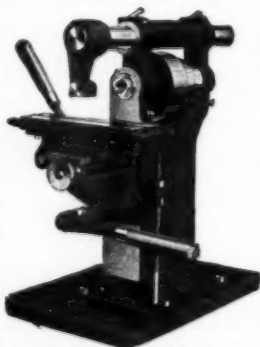


Is our New Model Bench Miller; because, we furnish with the machine our Quick operating Lever Vise, also Index Centers and two speed friction countershaft.

Send for circular

The Carter & Hakes Co. West Winsted, Conn., U. S. A.

AGENTS—for New England and New York, Hill, Clarke & Co.
WESTERN AGENTS—Marshall & Huschart Machinery Co.,
Chicago, St. Louis, Indianapolis.



Burke's No. 3 Bench Millers

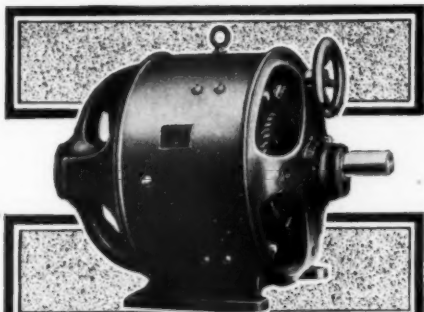
Are Seasoned Tools

Our system of tests insures accuracy, and our methods of construction make it permanent. Frames and parts are carried 6 to 8 months, after work begins on them, before the completed tools receive our final O. K., and all parts are finished and fitted with exceptional care.

Longitudinal feed, 6 in.;
traverse feed, $3\frac{1}{2}$ in.; vertical
motion of knee, 8 $\frac{1}{2}$ in.; table
surface, 3 $\frac{1}{2}$ x12 inch.

Write for Catalog, which also shows larger and smaller sizes.

The Burke Machine Tool Co.
Conneaut, Ohio



Get any speed easily—quickly

That's what you must do to get the most out of those machines on which the working conditions are frequently changing. The simplest way to get just the speed that suits the job is by applying

Reliance Adjustable Speed Motors

These motors run at any speed with a constant horsepower output over any range up to 1 to 10. To change the speed just turn the hand wheel--no electric controller is needed.

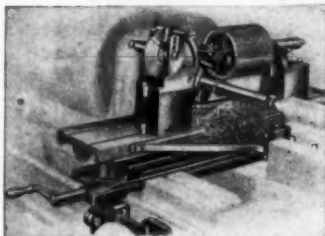
Get the details in folder 10L

(We build constant speed motors)

Reliance Electric & Engineering Co.
1050 Ivanhoe Road, Cleveland, O.

Mafreto Milling Attachment

Made to Fit Any Lathe



It does all kinds of milling that can be done on a plain milling machine, and has a range of movement greater than any milling machine at double the cost.

The standard equipment includes index, head and tail elevating blocks, and hand lever.

We also manufacture Hand and Power Shears and Punches

Pleased to mail Catalogs upon request

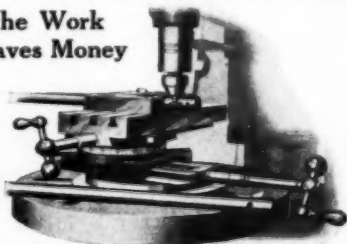
Mafreto Machine & Tool Co.

53 Gardner St., Worcester, Mass.

Davis Milling Attachment

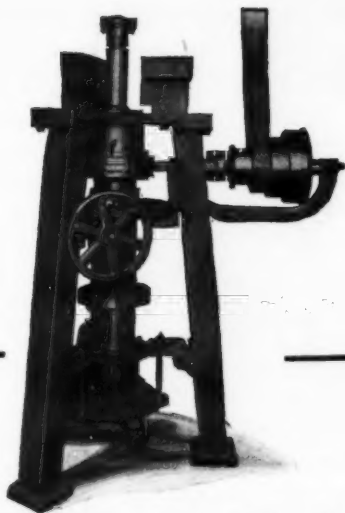
Does the Work
And Saves Money

Converts
any Drill
Press from
14 to 42-in.
swing in
2 Minutes



Cuts keyseats straight or taper cuts the Woodruff or half moon keyseats perfectly; mills deep grooves or slots and cams; cuts clutch jaws, etc. Does 90% of the lighter jobs as well as a \$1,000 machine for die-maker, repair shop and garage. A small price buys this big economy.

Hinckley Machine Works, HINCKLEY, ILL.



For Reboring Auto Cylinders

This machine cannot be excelled.

It is especially designed for reboring worn or scored cylinders and is adaptable for single, twin or enbloc types. The work is easily, quickly set up and accurately rebored with a finish that leaves nothing to be desired.

As the means of establishing a growing business of excellent returns it is far ahead of any ordinary proposition.

Manufacturers of Portable Cylinder Boring Bars, Crank Pin Turning Machines, Milling Machines, Pipe Benders, etc.

Write for catalog.

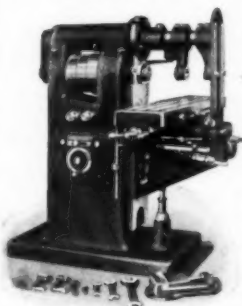
Pedrick Tool & Machine Co.

3644 N. Lawrence St., Philadelphia

**Rockford No. 2 Double Back Geared
New Heavy Duty Plain Miller**

Table, 50"x11½".

Range, 28"x8"x19".



A massive frame; an overhanging arm, with patented flanged support; a powerful drive, with large steel gears—that is a construction that insures heavy cuts without chatter or vibration. Spindle speeds, 18; feeds, 14. All controlling levers in front. It is convenient, powerful and accurate.

*Write for complete
illustrated description*

Rockford Milling Mche. Co.
Rockford, Ill.

**DICKOW'S 10-Inch Universal
Index Centers
Are Big Money Savers**



You save from \$40. to \$90. on first cost, and many times that by our simple construction. Any ordinary person can operate them.

Accuracy guaranteed

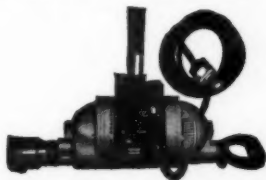
Price Only \$85 Net **F. O. B. Cars
Chicago**

Sold by all dealers. Write today.

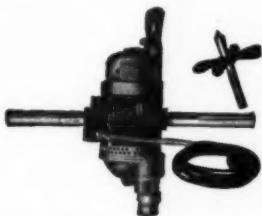
Fred. C. Dickow, 35 So. Desplaines St., Chicago, Ill.

Universal Motor Drills

For Use On Either Current



This drill is made in 3-16", $\frac{1}{4}$ ", $\frac{3}{8}$ " & $\frac{1}{2}$ " size. Gears run in grease. Motor air cooled, and is made to stand hard service. Sent on trial.



0 to $\frac{7}{8}$ Universal Drill

The motors used in these drills are Westinghouse motors, and operate on 25, 30, 40 or 60 cycle. 110 or 220 volts.

The U. S. Electrical Tool Co.
Cincinnati, Ohio

NEW YORK, - 50 Church St. CHICAGO, - 9 S. Clinton St.
BOSTON, - 12 Pearl St. ST. LOUIS, 511 Commercial Bldg.

Stock carried at branch offices.

STAMPINGS

A 15 acre plant modernly equipped—a large force of expert workmen—a specialized engineering staff—and our 34 years' experience are at your command when you use

G.P.&F. Service
Knowing How Since '81

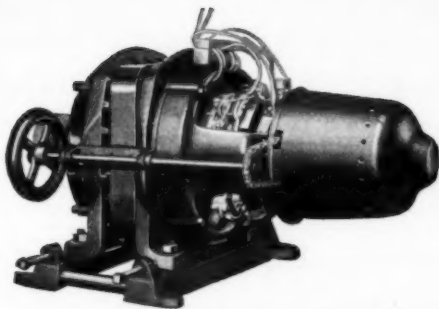
Put your sheet metal article and part problems up to us. G. P. & F. Service can turn out your sheet metal work better, and at lower cost than you. That's our business. We are specialists in Stamping, Drawing and Spinning in sheet metals of every description. Also equipped for Porcelain Enameling and Japanning.

Send blue print or specification for estimate. Let G. P. & F. Service save you money—hundreds of other manufacturers have done so.

Geuder, Paeschke & Frey Co.

1321-1700 St. Paul Ave.

Milwaukee, Wis.



Something Radically New

An Adjustable Speed, Single Phase, Alternating Current Motor expressly for Machine Tools

The KIMBLE

Alternating Current Motor

For the first time in history, the man who builds or uses lathes, planers, drill presses or other machine tools is offered an alternating current motor for direct connection to the machine which gives the advantage of an infinite number of speed changes, without the use of countershafts, cone pulleys, or other complicated speed-changing devices.

Set speeds are maintained through all variations of load.

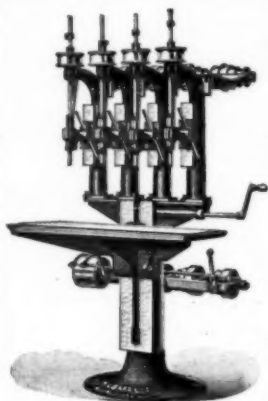
Motor has dynamic brake.

No motor generator set is necessary, hence no loss of initial current metered.

Sizes $\frac{1}{2}$ h. p. to 2 h. p. Pedestal mounting or swing-stand mounting. All sizes equipped throughout with S. K. F. Ball Bearings.

Send for circulars and prices

KIMBLE ELECTRIC COMPANY
2409 W. Erie St., Chicago



The Well Known
H. G. Barr Line
 of
Sensitive Drills

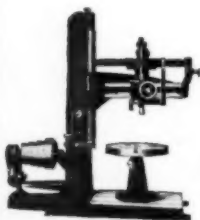
with one to six
 spindles.

*Send for catalog
 if interested*

Reed Drill Co.

43 Hammond St.
 Worcester, Mass.

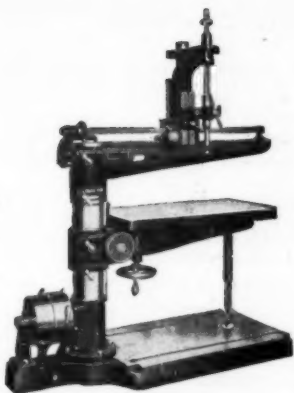
A perfect Radial Drill must
 move or stand still almost
 at man's will. As quick to
 respond—"as the eye is."



The New Gang Radial Drill
 Catalogue ready for mailing

THE WM. E. GANG CO.

Cincinnati, O.



Designed To Save Time And Costs

The T. & F. Manufacturers' Radial Drilling Machine has established lower cost records

TO DOUBLE and even treble the output of certain kinds of work means to effect a real, worth-while saving. That's what this T. & F. machine is doing in many shops where they have to drill holes ($\frac{3}{4}$ -in. and under) in big, unwieldy pieces. By applying drilling heads of different types it can be made to cover nearly all drilling requirements within its range.

Automatic power feed, lever feed, high speed sensitive or tapping heads may be used on this machine, either singly or in combination. The drilling head is similar in construction to our other standard types, and is mounted on an arm along which it is moved by means of a rack and pinion.

*Convenient, efficient and economical.
Send for details and drilling records.*

The Taylor & Fenn Company
Hartford, Conn.

A Tip Top Tool

At a Low Price

This Mechanics' Standard 14" Drill is one of our very best sellers because of its great speed and convenience. Fifty per cent of the work usually done with a 20" drill, this 14" does quicker and easier—**economy!**

We make Upright and Gang Drilling Machines in all sizes—accurate, high grade, dependable tools.

Have you our Catalog?

ROCKFORD MACHINE TOOL CO., - Rockford, Ill.

Manufacturers of Planers, Shapers and Mechanics' Drills.



The "Economy"

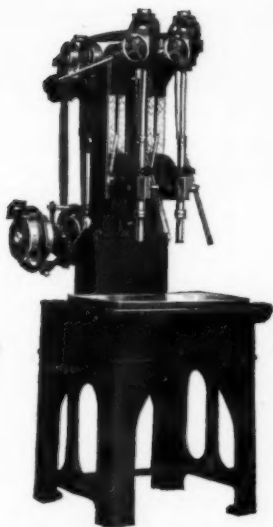
10 in. Bench Drill

Built upon the principle of our larger sensitives, it marks a step forward in the capacity of bench drills. Table swings around column, tilts to any angle, and has adjustable gauge for angular drilling. The forged and ground high carbon steel spindle has ball bearing thrust. The patented belt tightener is also a valuable feature. Furnished with 2-step cone and driving pulleys or 3-step cone and countershaft.

Write for description of this and our 12 OTHER STYLES of Drill Presses

ROCKFORD LATHE & DRILL CO., - Rockford, Ill.

Also 13, 14 and 16-inch Engine Lathes



**With
One
to
Eight
Spindles**

**For
¾-in.
Drills
and
Smaller**

Henry & Wright

Improved High-Speed Drilling Machines are making a still further reduction in the cost of drilling holes, because we have not waited for some other builder to improve upon our earlier models, which had themselves established new records in drilling. We have made the improvements ourselves.

Frictionless bearings; the most efficient power transmission, under perfect control; practical improvements throughout, that have been wrought by painstaking, scientific methods—these tell in brief why over 2,000 Henry & Wright spindles are running in one shop, and why other manufacturers are reducing drilling costs by standardizing on Henry & Wrights.

More complete information without obligation and our Special Chart of Drilling Feeds and Speeds for the asking

The Henry & Wright Mfg. Co.
760 Windsor St., Hartford, Conn.



The Production Boss

"Don't Care A Cuss"

What make or kind of tool he uses—he wants **SERVICE**; he must have **continuous PRODUCTION**.

KELLY Adjustable Boring Tools and Floating Reamers give just the service he wants, or they are returnable at our expense.

Ask for Catalog H., our NEW ONE.

THE KELLY REAMER CO.

CLEVELAND, OHIO, U. S. A.

C. W. Burton Griffiths & Co., London, English Agts. 40 Domestic Agencies



*They
Come!*

As a boon and as a blessing to men, **GRANT NOISELESS ROTARY RIVETERS**, when output and finish are both required. They will never fail to give the service desired. A whole regiment of

Grant Noiseless Riveters

can be in operation at the same time without the slightest noise or vibration.

Other exclusive features: Will not mar surface in riveting. Spin highly polished rivet head. Rivet tight or loose. Riveting operation "One Second."

Send samples and let us show you what a Grant Riveter will do for you.

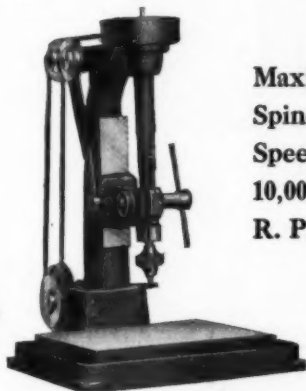
Grant Mfg. & Machine Co.

Station "C. E."

Bridgeport, Conn.

Save Money

with this
High Speed Drill



**Maximum
Spindle
Speed
10,000
R. P. M.**

**Patents
Pending**

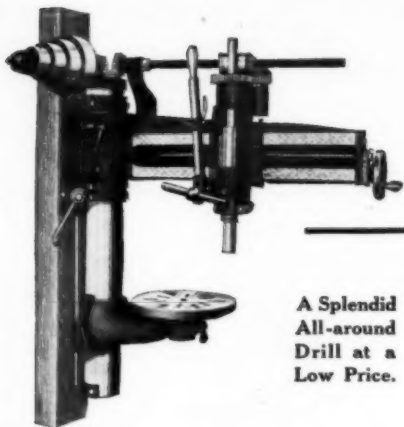
**Double Your Production on Holes
up to $\frac{3}{8}$ " in diameter**

This machine is carefully and accurately built to give the greatest service. Equipped with Hess Bright Ball Bearings throughout.

Ask for Bulletin No. 502

Leland-Gifford Co.
Worcester, Mass., U. S. A.





**A Splendid
All-around
Drill at a
Low Price.**

A Wall or Post Radial

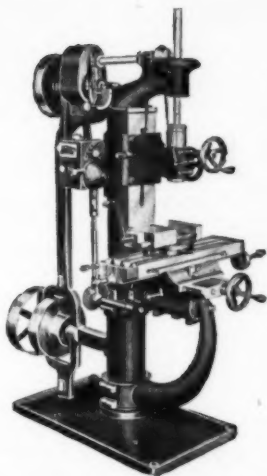
Furnished with either 2½ or 3½-ft. Arm

This is a tool of high-grade construction. We can afford to sell it at a moderate price for the very simple reason that we can build a thoroughly modern drill of this kind at a much lower cost than a radial of the floor type, without sacrifice of quality or drilling efficiency.

It will do the work of a 30-in. stationary floor drill and of a 2½-ft. radial, and therefore will meet all the drilling requirements of many a shop. And it is a mighty good all-around drilling machine for a shop of any kind.

*You will be pleased with full description—and the price.
And we want to send them to you. What's your address?*

Canedy-Otto Manufacturing Co.
Chicago Heights, Ill.



Reduce Your Machining Costs

**With the Time and Labor Saving
Knight Milling and Drilling Machines**

YOUR TOOL ROOM is always under heavy labor expense—that's why it's so profitable to put in a Knight that saves 20 to 50% of time on hard machining of all sorts.

Mills, bores and drills at any angle with only one setting of the work. It has no equal for dies, jigs, metal patterns, moulds, etc. A choice of 3 sizes. Our Duplex Miller is also a top-notch in the way of lowering costs.

Let us send you our illustrated circulars—today

W. B. Knight Machinery Company
St. Louis, Mo.



Universal Drill

"Standard" Electric Universal Drills and Grinders



"Standard" Aerial Grinder For Surfacing Rough Castings, etc.

Made in the Universal type for operation on both alternating and direct current. Also made for direct current only.

For grinding and cleaning castings, or polishing with felt wheel. Can be suspended from ceiling or traveler. Can also be used in close places and corners.

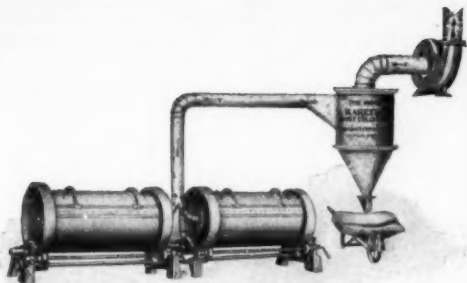
*Order a "Standard" on trial, and write for
new Bulletin and Circulars on Tests*

**Ask us
for list
of users**

THE STANDARD

ELECTRIC TOOL CO.
CINCINNATI, OHIO, U. S. A.

**New York
Office:
30 Church St.**



Remove the Dust

Increase Efficiency and Health



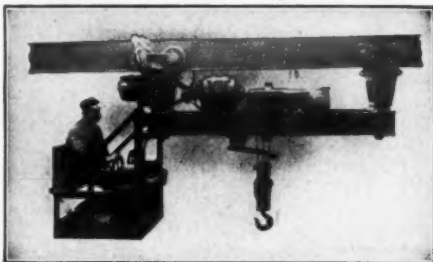
THE MORSE COLLECTOR removes dust of all sorts thoroughly and economically. No matter how heavy, gritty, or grinding the dust—whether raised by emery and polishing wheels, sand blasts or tumbling barrels—the Morse does it well and at lowest cost.

The Collector is located between the source of dust supply and the fan, so that the fan *draws* the air through the collector and maintains a constant vacuum tendency—the “rarefied” principle—in the collector casing. The dust is collected and automatically discharged before the air reaches the fan. This prevents abrasion of fan parts, reduces repairs to a minimum, and gives long life to the fan.

*The complete story is told in our free Booklet.
Write for it and get posted.*

The Knickerbocker Company
Jackson, Michigan

Mono Rail Hoists and Over Head Track Systems

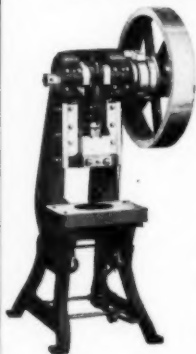


A 5-ton hoist operated from cab or floor for transferring material from one building to another, unloading cars, general yard work, etc. Mono Rail Hoists and trolleys of all types.

Nothing too large or too small for our careful, prompt attention.

The Euclid Crane & Hoist Company
Euclid, Ohio

Tremendous Power



Backed up by rigid
straight line frame enable

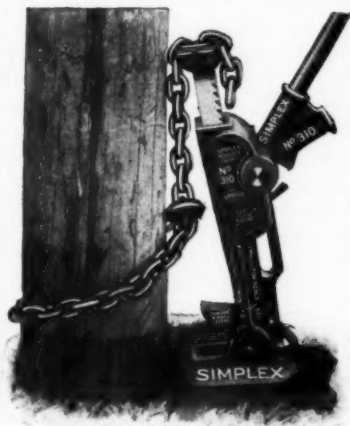
HIGH DUTY
ROCKFORD
PUNCH PRESSES

To *out-punch* and *out-work* any press of their size. Write today for complete construction details.

The Rockford Iron Works
Rockford, Ill.

No. 310 Simplex Emergency Jack

A Tool of the Greatest Safety and Efficiency
For Pulling or Pushing, Raising or Lowering



For
raising
or
moving
Machines,
Engines,
Boilers,
or
other
heavy
objects

Pulling or Straightening a Telephone Pole

The above is an illustration of Simplex adaptability, showing one of the thousand-and-one usual and unusual purposes for which the No. 310 Simplex Emergency Jack may be used.

In practically every plant it will save accidents and reduce non-productive labor, and in many a sudden emergency it saves its cost over and over.

*Let us ship a Jack for 15 days' trial on your work
Descriptive matter upon request*

Templeton, Kenly & Co., Ltd., Sole Mfrs.
1024 South Central Ave., Chicago, Ill.

"M. E. C." Collapsible Taps

HUNDREDS of users state that they increased their output from 30 to 50 per cent since they employed "M.E.C." Collapsible Taps. They succeed where others fail.

Let us convince you by sending one on 30 days trial.

Made in 11 sizes from 15-32 in. to 3 in. straight threads, including $\frac{1}{4}$ in. to 2 $\frac{1}{2}$ in. iron pipe sizes.

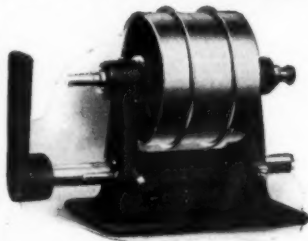
Manufacturers Equipment Co.

169 No. Jefferson St.,
Chicago, Ill.

We also manufacture various styles and sizes of "M.E.C." Air Chucks & furnish complete equipments of tools for brass & iron manufacture.



This Tapping Machine Now Has Greater Capacity



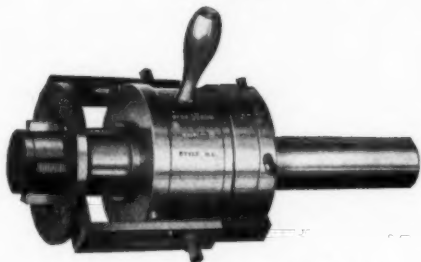
Burke's
No. "D" Taps
 $\frac{5}{8}$ " Holes
in
Horseshoe
Steel

BUILT throughout with exceptional care, our several sizes give service in proportion. Accurate, rapid and convenient, they give solid satisfaction. No. "D" sells for \$35.

Send for details today.

The Burke Machine Tool Co., Conneaut,
Ohio

**There Is No Backing Out
Where
Geometric Adjustable Collapsing Taps
are used**



The chasers collapse automatically when the desired depth has been tapped, and the Tap is withdrawn without touching the finished thread.

Geometric Collapsing Taps can be applied to Turret Head Machines or Live Spindles.

When the chasers become worn beyond regrinding they are renewed at small cost, and the Tap remains as good as new.

**Geometric Collapsing Taps have
Everything to Recommend Them**

Put Your Tapping Proposition up to Us.

The Geometric Tool Company

New Haven, Conn.

Chicago Office, 541 W. Washington Blvd.

The first to adopt Ball Bearings in their
Electric Drills was

"Van Dorn"

Other electric drill theorists contended it was impractical—"Van Dorn" contended *it was* practical and PROVED IT—a case of the proper ball bearings, properly applied.

"Years of Service" is the proof of "Van Dorn" Electric Drill stability.

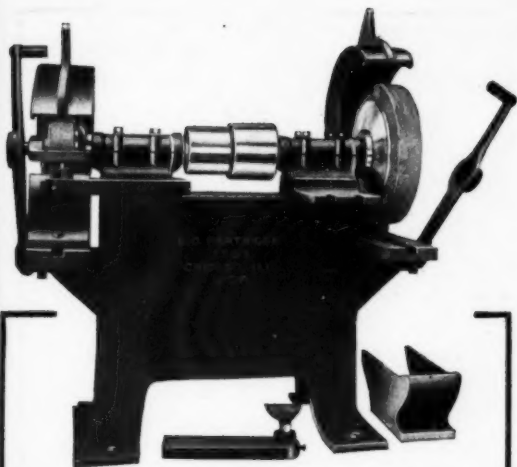
Make your next one a "Van Dorn."

Buy a tried and proven machine that insures "Service."

The Van Dorn Electric Tool Co.

General Office and Works: Cleveland, O., U.S.A.





Partridge Heavy Grinder

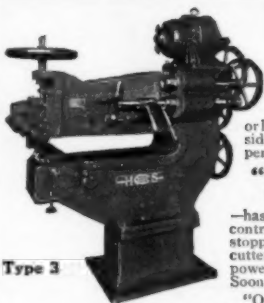
GUARDS PATENTED

¶ The No. 555 carries 18x3 emery wheels, and is built for heavy grinding. Net weight is 1,160 lbs.

¶ The heavy steel guards are adjustable to the wear of the wheels, and are fastened rigidly to the machine. It is equipped with attachments to connect with blower system. No. 555 is SAFE, efficient and durable.

Your request will bring details and price

E. O. PARTRIDGE, 2047-9 W. Lake St., CHICAGO



Type 3

**Saves
90% Labor**

No Cutting In From Side

Type 3 "Quickwork" Rotary Shear cuts serpentine or the most irregular curves or openings in 3-16" thick steel or lighter without cutting in from side of sheet. Leaves metal perfectly flat and true.

"QUICKWORK" Rotary Shear

—has 4 changes of speed instantly controlled by lever. Started and stopped at any point of cut. Upper cutter raised and lowered by power. Saves 5 to 40% of stock. Soon pays for itself.

"Quickwork" Rotary Shears are made to cut from 16 gauge to 1" thick steel. Sold on trial—fully guaranteed.

Send for free sample cuttings, descriptions and prices. Write today.

H. Collier Smith

815 Scotten Ave.,

Detroit, Mich.



No. 3 Tool and Surface Grinder

Vertical travel of table, 12"

Three point suspension of table, absolutely preventing rocking.

Micrometer adjustment of table.

Head & column cast in one piece.

Both Surface and Tool end equipped with Valley City Adjustable Protection and Exhaust Hoods.

A happy combination and a very serviceable outfit.

Write for quotations and circulars.

Valley City Mche. Wks.

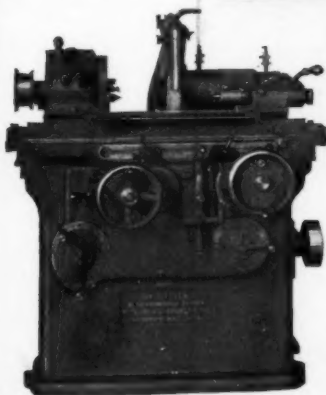
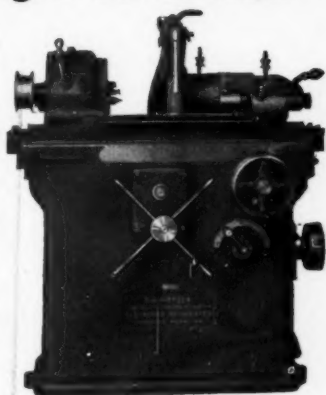
Campan & Fulton Sts., Grand Rapids, Mich.

A Manufacturing Machine of Large Capacity

Fitchburg 6-15 Grinder

One that because of the power and rigidity embodied in it has a commercial accuracy and rapidity of production guaranteed beyond that of any machine of equal wheel capacity.

This machine affords ease and economy in operation because of its **Centralized Control**.



Its limits are 6"x15" work for straight or taper cylindrical grinding. Dead or live centers can be used—made in two styles. It can show you a marked decrease in floor space now required.

Durability and accessibility are made facts by its design. Details as given in our catalog will convince you.

Would you let this chance for lower grinding costs pass by? Write

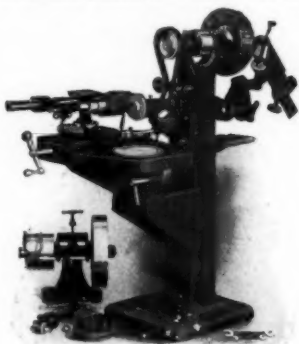
THE FITCHBURG GRINDER CO., Fitchburg, Mass.

This is An Inexpensive
Cutter, Reamer and Drill Grinder

**It has Generous Range and Capacity
The Price is Within Your Reach**

Don't delay—look it up now!

Particulars, prices, etc., sent on request.



Style BX

We also make

**Drill Grinders—Surface Grinders—
Lathe Center Grinders—Universal
Grinders—Tool Grinders—etc.**

Wilmarth & Morman Co.

1185 Monroe Ave., Grand Rapids, Mich.

A Complete Grinding Outfit



Greenfield

Universal Grinding Machine

is an all-around tool room machine. It is not only suitable for sharpening all sorts of machine shop tools but is furnished with attachments for cylindrical, internal and flat work.

All the odd jobs of grinding that constantly arise in tool and jig making may be accomplished on this machine quickly and accurately.

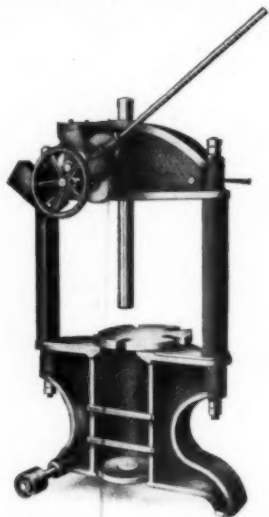
**It sells at a price within
the reach of every shop.**

Get acquainted with this tool before you buy; probably we can tell you of satisfied users right in your locality.

We also build Plain Grinding Machines for production work

Greenfield Machine Company
Greenfield, Mass., U. S. A.

The New No. 17 Cre

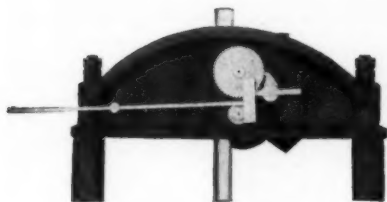


Leverage, 250—1. Weight, 2100 lbs.

Some machinery dealers in different parts of the country are showing the No. 17 with a 180 pound weight hung upon the end of the lever. A hydraulic gauge upon the end of the ram shows that 21 tons is being exerted by the 180 pounds—a loss by friction of only 6.67%.

EDWIN E. BARTLETT, 350 A

Greenerd Arbor Press



Holding Attachment

This Holding Attachment shown as a part of the No. 17 Press, can be applied to any size press.

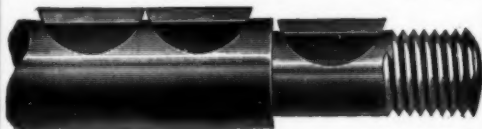
The weight shown in front of the ratchet when in this position holds the pawls in mesh with the ratchet. The weight, if moved to the other end of the bar upon which it hangs, sheds the pawls from the ratchet. The ram can then be easily moved in either direction by the hand-wheel in front of the press.

Two pawls, one of which is half a tooth shorter than the other, holds the ratchet on the half tooth.

Inquire of your dealer or write direct to

330 A Street, BOSTON, U. S. A.

"Whitney" Keys and Cutters **For** **"The Woodruff System of Keying"**



No. 16 CUTTER FULL SIZE

"Whitney" Keys are made in 114 different sizes and in three grades as follows:

Regular Carbon Steel Keys

Regular Carbon Steel Keys Case Hardened

Nickel Steel Keys Heat Treated

"Whitney" Cutters are furnished in both Carbon Steel and High Speed Steel, so no matter what your requirements, you will find in our line exactly the Key and Cutter to meet your particular conditions.

Catalog No. 10 Gives Full Particulars

The Whitney Manufacturing Co.,
Hartford, Conn.

Chains—Keys—Hand Milling Machines



Brown & Sharpe

Milling Cutters

Produce Results

Designed for highest efficiency in milling.
You can rely on their uniform temper.
We are careful of the small details of finish.
Our large stock insures prompt deliveries.

Brown & Sharpe Mfg. Co.
Providence, R. I., U. S. A.

A full stock of Cutters at our Chicago Store, No. 626 Washington Blvd.





Find Out!

Vulcanized Fibre for Machine Parts

may be much better and cheaper
than the materials you are using,
and it's worth investigation.

Let us figure on these parts for your machines:

Gears
Frictions
Washers

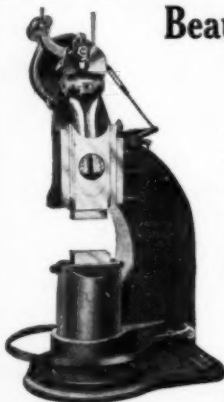
Bushings
Thrust Washers
Guide Collars

Discs
Handles
Etc., Etc.

Or send us blue prints or samples of special parts.

Write for Catalog, which tells the story of the original Vulcanized Fibre and its uses, and contains price list on stock parts, sheets, tubes and rods.

American Vulcanized Fibre Co., Wilmington, Delaware.



Beaudry Champion Hammers

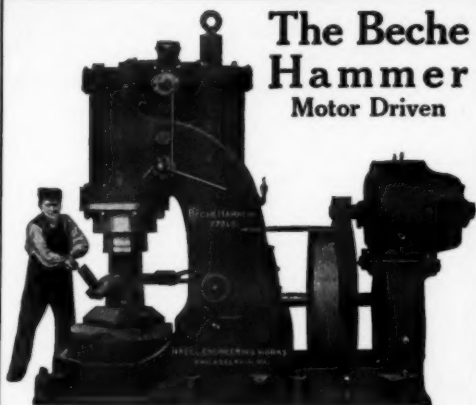
Occupy small floor space;
will handle varying thick-
nesses of stock without re-
adjusting; quick and direct
acting and always under
perfect control.

*New Catalogue just out
Ask for it*

Beaudry & Co., Inc.
141 Milk St., Boston, Mass.

The Beche Hammer

Motor Driven



**The Heaviest, Most Powerful, Efficient
and Economical Hammer of Its
Size on the Market.**

*Hammer and Compressor Combined, No Piston
Rods, Springs, Straps or Cushions.*

Simple—Durable—Reliable

Powerful, non-bounding, squeezing blow. Positive, flexible control. Long stroke. Variable blows at will. No adjustments. Dies at any angle. Belt drive, no countershaft. Motor drive, geared direct.

Sizes and Efficient Capacities of Beche Hammers

No. 1	No. 2	No. 3	No. 4	No. 5	No. 6
2" dia.	4" dia.	5" dia.	7" dia.	8" dia.	9" dia.

Write for Catalogue and Prices

Nazel Engineering & Machine Works

Sole Builders for United States and Canada

5th and Luzerne Sts. - - Philadelphia, Pa.

Lourie Hydraulic Armature Press

Capacity 100 Tons

Distance between platens 90-in. Distance between bars 36-in.
Can be furnished of any size and capacity.

NOTE: - Carriage with adjustable bearings for armature.

The push may be made against notches in sidebars or against the adjustable crosshead.

It may be used as a *Wheel Press*.

The material can be dropped into this press from an overhead track.



Made by
Lourie Manufacturing Co.
Springfield, Illinois

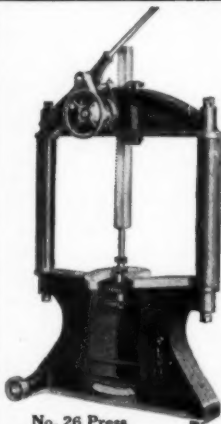
Efficient Equipment

For driving mandrels, bending and straightening, broaching, embossing with dies, setting bushings and many other every day manufacturing jobs, there is an *Eames Press*. All sizes for all purposes requiring centering capacity up to 38" and pressure up to 25 or 30 tons.

It will pay you to investigate.

Atlas Press Co.

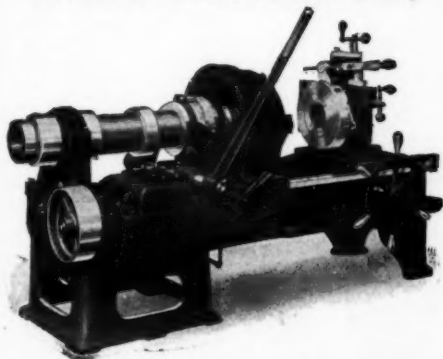
313 N. Park St.,
Kalamazoo, Mich., U. S. A.



No. 26 Press

30 Years On Pipe Machines

Studying, building, testing and improving until the 17 styles and sizes of B. & K.'s are standards of efficiency



WE HAVE THEM TO THREAD and cut $\frac{1}{4}$ -in. to 18-in. pipe, each machine being specialized for its class of work. The famous Peerless Adjusting Mechanism is used on all of them. It is simple, reliable, and quick of adjustment to the thousandth of an inch without the use of tools.

B. & K.'s stand up perfectly in making up fittings, which is harder on machines than thread cutting. The nipple holders will not injure threads; chuck jaws are readily sharpened without drawing temper.

We have something extra good to show you as the result of our 30 years' experience. Send for our Catalog and tell us your requirements.

Bignall & Keeler Machine Works
Edwardsville, Ill.

Gray & Prior Soda And Potash Kettles

**Are Cheap to Buy
And Inexpensive to Run**

Their first cost is much less than that of steam heated kettles, and they do not require any expensive auxiliaries such as steam traps, valves and permanent connections to live steam pipes.

They are heated with a Bunsen gas burner, which makes them perfectly portable; and a boiling solution of sal soda, costing a cent a gallon, cleans small machine parts as quickly and thoroughly as gasoline, without risk of fire or explosion.

They are unsurpassed for removing the dirt, grease and chips from new machine parts for case hardening, plating or assembling, and wonderfully handy for cleaning parts of used machines or motor cars that are being overhauled.

Simply put the parts in the basket, immerse in the boiling solution, and they come out clean and so warm that they dry off quickly without danger of rusting.



Made in 10 and 30 Gallon Sizes

For more complete information, write to

Gray & Prior Machine Co.
Hartford, Conn.

Terrell's Steel Lockers

Are a Satisfying Investment



Their first cost is very little more than that of wood—so little more that it might surprise you.

And after their installation, it is satisfying to know that there will be no further expense for upkeep or repairs—they are as permanent as the walls themselves.

And it is satisfying to know that you have made your plant more attractive to first-class men—the sort you want to get and keep; that you have given them a clothing receptacle which is sightly, sanitary, dust-proof and vermin-proof—something that you would be satisfied with yourself.

Terrell's Unit Steel Lockers meet every legal and sanitary requirement, save room and insurance cost, and will be good as long as your plant endures—without further expense.

*Let us figure on your requirements, anyway.
There will be no obligation beyond your own wishes.*

Terrell's Equipment Co.

Hall & Division Sts.,

Grand Rapids, Mich.

Also ask about our Unit Construction for Steel Bins, Shelves and Racks. They make orderly factories.

The Greatest Shop Convenience For the Small Cost



"The Handiest Racks"

come to you cheaper than we got ours, for we build them now in quantities for the market. We made the first ones only for our own use at quite a little higher cost, and were tickled to death with them.

Others saw them and liked them too, which finally led us to making them for sale.

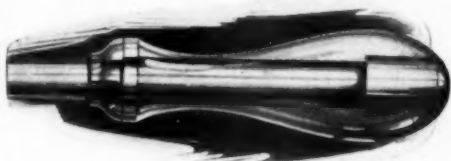
They save 75 per cent in space, prevent accidents, are easy to load and unload, and save time enough in handling material to cover their cost in a few weeks.

Write for description and price

Wm. S. Yohe Supply Co.

314 Lincoln Way, West.,

Canton, Ohio



Quick Action

This is what we call this new Machine Handle. Attached to any power tool, especially the heavier types; adjustments are made with more speed and less effort.

All kinds of standard and special Handles from steel for power tools and similar purposes.

Send for Catalogue and prices

The Cincinnati Ball Crank Co.

Oakley, Cincinnati, Ohio

Are You Paying for a Canton Crane Without having one



**Canton Cranes
can be
furnished with
Double Gears,
when desired,
at a small
extra cost.**

When you have a heavy lift to set will you call six men from their work to assist when it is only a one man job with the "Handy Tool"? Are you paying for this extra labor—which in one year amounts to several times the cost of this Hoist? In other words, are you paying for a CANTON Crane without being able to use it?

The "Handiest Tool in the Shop"

goes quickly where nothing else can reach—it makes one man's time worth six and no matter how well you are equipped, it is bound to speed up your production. Catalog E-8 gives you interesting facts.

Write for it

**Canton Foundry & Machine Co.
Canton, Ohio**

A Really High Speed Saw Marvel No. 4

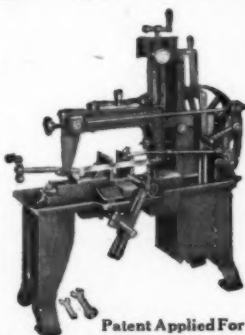
Cuts 6-in. round cold rolled steel in 10 minutes; smaller sizes in proportion.

Cuts on draw stroke only, with any desired pressure, and with quick return.

A strictly high-grade tool, improved right up to the minute—the kind that it pays to buy.

Also other Hack Saws, Punches and Shears.

Write for circulars.



Patent Applied For

Armstrong-Blum Mfg. Co., 341 N. Francisco Ave.
CHICAGO, ILL.

Cuts Hard Steel Without Waste Quickly and Cheaply

Don't notch and break high speed steel—the better and cheaper way is to use

Peter Bros. Ball Bearing Abrasive Metal Cutter

Cuts any hardened steel, soft metal, rods, bars or tubing, or combined wood and metal so smoothly and accurately, that the waste is only what the wheel cuts out—1-16-in. It soon pays its own cost.

15 Days' Trial at Our Risk

Two Sizes: 12", with ball bearing counter, cutting to 2 1/2" diameter; adjustable gauge; swiveling table; imported ball bearings. 8" size, cutting steel to 8" square.

*Order of your dealer,
or write direct to us*

PETER BROTHERS MFG. CO.
115 Railroad St., Algonquin, Ill.



The Newly Improved Racine High Speed Metal Cutting Machine



The Racine High-Speed Metal Cutting Machine does as much work as five ordinary Hack Saws, lowers the time and cost of cutting metal, and reduces the blade expense 100% over any other machine in the market.

This machine has a **three-speed transmission**, and with it you can cut any metal at the proper speed, practically giving you **three machines in one**.

This machine **never** fails to clear the blade on the non-cutting stroke—it has a Patented Positive Lifting Device.

Write today for Catalog and free trial offer

Racine Tool & Machine Co.

1500 Junction Ave. S., Racine, Wis., U. S. A.

Pattern Shop Machinery

Special Prices if you refer to this ad.



Band Saws

Chicago No. 00 27 in. Wheels

" No. 0 32 " "

" No. 1 36 " "



Saw Tables

Chicago No. 5 Stationary Table

" No. 9 Tilting Table

" No. 10

Boring attachment if wanted.



Jointers

8 in., 5 and 6 ft. tables and guard.
12, 16, 20, 24 and 30 in., 7 ft. tables
and guard.

Trimmers, Lathes, Core Box Tools, etc.

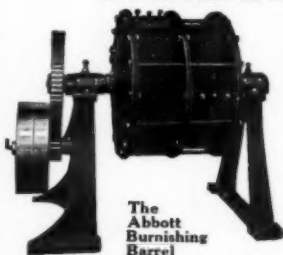
Ask for full descriptions

Chicago Machinery Exchange

1214-1228 Washington Boulevard, Chicago

Cost Of Burnishing Reduced

75 to 99 Cents on the Dollar



The
Abbott
Burnishing
Barrel

The Abbott Steel Ball Burnishing

not only burnishes
by the bushel at an
immense reduction
in cost, but it pro-
duces a more highly
polished and more
uniform surface,
without injury to
parts and without
removing any of the
metal. Write for
free booklet, and—

Send samples for burnishing and cost estimates.

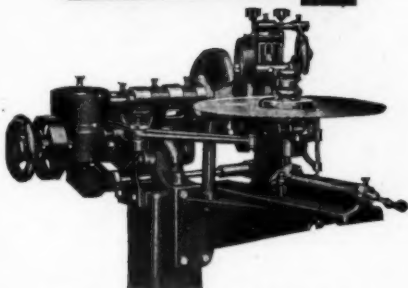
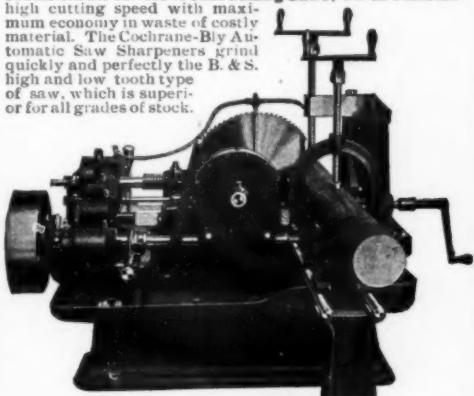
The Abbott Ball Company

Elmwood District, Hartford, Conn.

Economy In Cutting

Is the Paramount Consideration

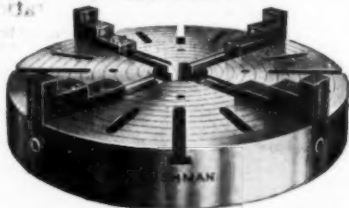
The Cochrane-Bly Cold Saws furnish highly favorable conditions for the use of **Thin Milling Saws**, which combine high cutting speed with maximum economy in waste of costly material. The Cochrane-Bly Automatic Saw Sharpeners grind quickly and perfectly the B. & S. high and low tooth type of saw, which is superior for all grades of stock.



*This combination greatly reduces cutting costs.
Let us tell you just how and why.*

Cochrane-Bly Co., Rochester, New York,
U. S. A.

**"CUSHMAN"
CHUCKS**
AND
FACE PLATE JAWS



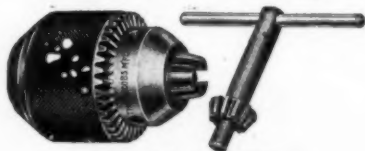
Chucks For All Purposes

Our line consists of so many styles and sizes that you should have our catalog on file.

Let us tell you about our All-Steel Chucks

The Cushman Chuck Company, Hartford, Conn., U. S. A.

Guaranteed!



Patented Sept. 16, 1902

**Jacobs Improved Drill Chucks are sold
under the following Guarantee:**

Regardless of where or when purchased, upon receipt of any part or parts of Jacobs Chucks that have not given reasonable service, we will gladly replace same—**no charge.**

There can be no stronger GUARANTEE

**The Jacobs Manufacturing Co.
Hartford, Conn., U. S. A.**

"I purchased one of your 12-in. 3-jawed combination Universal and Independent Sweetland Chucks in the spring of 1886—This chuck is still in service."

L. A. V.—Beloit, Wis.

SWEETLAND CHUCKS

Three buying reasons—

They grip the work quickly and easily, hold it firmly and give service for years.



May we send you a copy of our new Catalog?

The Hoggson & Pettis Mfg. Co.
New Haven, Conn., U. S. A.

Tucker's Safety First



Closed

Oil Hole Covers
Require but one hand to pump in the oil. Adapted to all kinds of mechanism having oil holes leading to a bearing.

*Send for Catalogue
Oil Hole Covers
and Compression
Grease Cups*



Open
Style A



Style C



Style F, Drive



Style D



Open



Closed



Compression
Grease Cup



Rotary Head

W.C. & F.C. TUCKER, Hartford, Conn.



Self-Tightening! —

The harder the pressure on the drill the tighter the grip of the jaws.

The New Britain Drill Chuck

grips the drill with a sure grip that will not allow it to turn in the jaws, and you can crowd the drill all you wish to, knowing that the grip of the jaws will keep it from slipping,

and it is as easily released.

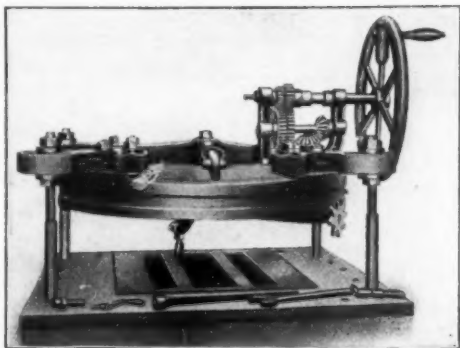
Let us show you!

Union Manufacturing Co.

26 Cortlandt St.,
New York

New Britain, Conn.

Makers of a Complete Line of Chucks.



Planes Any Surface Up To 42-in.

Diagonal Measurement

Our Portable Rotary Planer is adapted to a big variety of work. Besides facing off locomotive valves, it is readily attached to almost any shaped piece. Allows bolts and parts to remain intact, shortens shut-downs, and saves time, money and labor. The machine work is perfect—no filing or scraping afterwards, and no breaking of port edges. One of the six sizes is sure to fit your special requirements.

OUR LINE OF PORTABLES FURTHER INCLUDES
circular planer tools; radius planers; millers; machines for truing eccentrics, facing domes, arms for facing cylinder flanges; crank pin turners; rotary flue cleaners; pipe benders; rail saws; armature and axle bearing borers; reflex water glass grinders; motors, etc.

Economize with Portable Tools. Write for our Catalog.

L. B. Flanders Machine Works (Est. 1870)

H. B. Underwood & Company

1016-22 Buttonwood St., Philadelphia, Pa.

Second-Hand Machinery.

Lists of second-hand machinery, either for sale or wanted, will be published under this heading at the rate of **40 cents a line**, across the page, each issue, with a minimum charge of **\$4.00**. Sub-headings are counted as one line, but the name and address of advertiser are not included in the space charged for.

Write directly to the parties offering the machines for sale for prices and full descriptions. If you do not find what you require, use the post card inclosed with each book to make known your wants to the publisher.

FOR SALE BY

Wayne Machinery Co., Taylor St. & L. E. R. R., Fort Wayne, Ind.

RANDOM SELECTIONS

From our stock of over 600 machines.

Bolt cutter, No. 50 Green River.	Engine lathe, 34"x20" back geared.
Boring mill, 34" Colburn.	Hack saw, No. 4 Racine, hi speed.
Drill press, 20" Aurora.	Planer, 26"x26"x8" Pond, dbl. head.
Drill press, 36" Aurora, p. f.	Planer, 36"x36"x8" Powell.
Engine lathe, 14"x6" Cisco, q. c. g.	Punch, Standard, single end.
Engine lathe, 18"x8" Lodge-Barker.	Shaper, 16" Ohio, back geared.
Machine tools and pattern shop machines for every requirement.	
Write today for Wayne List, which fully describes our complete stock.	

FOR SALE BY

Enterprise Machy. Co., 521 Monroe St., Phone Main 1295, Chicago

Drill, radial, 30" Gang, p. f. \$175.	Lathe, precision (collet) \$ 35.
Grinder, 14", heavy. c. s. 28.	Lathe, turret, P. & W. 4" 70.
Grinder, surface, LaS. style 30.	Millers (4) \$175, to 500.
Grinder, cylinder, electric 45.	Punch press, No. 3 Consol 175.
Keyseater, heavy 90.	Punch press, No. 5 Niagara 350.
Lathe, 20" b. g., h. s. 95.	Sand blast, Guaranteed 200.
Lathe, 16x6 like new 250.	Saw, 24" band 35.
Lathe, 16x6 c. r., p. c. f., h. s. 220.	Shaper, L. & S. 12" crank 175.
Lathe, speed, h. s., chuck 23.	Trimmer, pattern makers 12.
Lathe, speed, h. s., c. r., chuck. 45.	We Make Dies.

FOR SALE BY

Badger-Packard Mchy. Co., 72-74-76 W. Water St., Milwaukee, Wis.

LATHES.

14"x6" Robbins lathe, hollow spindle, plain rest.	\$ 160.
14"x6" Silk lathe, hollow spdl., comp. rest, 8" 4-jaw independent chuck	175.
18"x10" Cincinnati lathe, hollow spindle, compound rest, 14" 4-jaw independent chuck	325.
24"x14" Bradford lathe, compound rest, solid spindle, with chuck and friction countershaft	400.
38"x26" New Haven lathe, compound rest, power cross feed, solid spindle, power feed on compound rest	750.
48"x16" Putnam lathe, compound rest, solid spindle, power cross-feed.	950.
50"x20" New Haven lathe, compound rest, solid spindle, power cross feed, power on compound rest	900.

PLANERS.

24"x24"x6" Lodge & Davis planer	\$ 400.
28"x26"x8" Merrill planer	275.
60"x60"x16" Niles planer	1100.

MISCELLANEOUS.

Bolt cutter, 3" National No. 6, taps and dies	\$ 200.
Drill, portable, No. 4 Dallett	60.
Press, 150-ton Eimes, 14' bars with cross head and short bars.	200.
Slotter, Putnam, 12" stroke	450.
Twist drill grinder, Yankee	40.
Water grinder, 16" Diamond	35.

SECOND-HAND MACHINERY

FOR SALE BY

The Motch & Merryweather Machinery Company,
707-715 Lakeside Av., N. W., - - - **Cleveland, Ohio**
Branches: Detroit, Cincinnati, Pittsburg.

LATHES.

- | | |
|---|--|
| 6"x30' Cataract bench lathe, complete with bench and all equip. | 18"x8' Flather, Davis, Walcott & W. |
| 11x4 Blount speed lathe. | 20"x12' Johnson. |
| 13x5 Blount speed lathe. | 22"x12' Pond. |
| 10"x5' Pratt & Whitney tool room lathe, complete. | 22"x16' Pond. |
| 13"x6' Willard, compound rest. | 36"x20' Niles, triple geared. |
| 14"x6' Prentice, compound rest. | 38"x24' Pittsburg, triple geared. |
| 14"x6' Prentice, rise and fall rest. | 39"x9' Roll lathe. |
| 16"x6' Flather, taper attachment. | 50"x18' Fifield, c. r., triple geared. |
| 16"x6' Davis, compound rest. | 52"x36' Hewes & Phillips, tri. grd. c. r. arranged for crankshaft turning. |
| 16"x6' LeBlond, compound rest. | 64"x43' Hewes & Phillips, comp. rest, taper attachment, triple geared, arranged for crankshaft work. |
| 16"x6' I. & S. patent head, c. rest. | 64"x43' Roach, c. rest, triple geared. |
| 16"x8' Flather. | |

BORING MACHINES.

- | | |
|----------------------------------|------------------------------|
| 6" horizontal Niles, table type. | 42" Colburn, 2 swivel heads. |
| Bement-Miles 4" bar, table type. | 72" Pond, friction feed. |
| 34" Colburn, 3-jaw chuck. | |

DRILLS, MULTIPLE.

- | | |
|------------------------------------|--|
| 8-spindle Baush, 1/2" capacity. | 8-spindle Moline rail drill, 1/2" cap. |
| No. 43 Gardam 8-spindle, 1/2" cap. | 10-spindle Baush multiple, 1/2" cap. |
| 3-spindle No. 1 Avey ball bearing. | |

DRILLS, UPRIGHTS.

- | | |
|---------------------------------------|---------------------------|
| 20" Baker, style "F". | 34" Barnes, sliding head. |
| 20" Mechanics, wheel and lever, 2 sp. | 40" Aurora, sliding head. |
| 32" Cincinnati, sliding head. | |

DRILLS, RADIALS.

- | | |
|-------------------------------------|----------------------------------|
| 24' & 2' Fosdick plain, cone drive. | 4' Fosdick radial, gear drive. |
| 3' Dreses & Mueller, cone gear id. | 4' Pond heavy plain, cone drive. |
| 4' Baush radial. | 8' Niles. |

DRILLS, SENSITIVE AND MULTIPLE.

- | | |
|--------------------------------------|-------------------------------------|
| 10" sensitive plain. Myers. | 14" Foote-Burt 2-spindle sensitive. |
| 10" Barnes, friction. | 14" Foote-Burt 6-spindle sensitive. |
| 12" 4-spindle Barr, sensitive. | 15" Barnes, friction drive. |
| 4-spindle Pratt & Whitney sensitive. | |

GEAR CUTTERS.

- | | |
|---------------------------------|--------------------------------|
| 26" Brown & Sharpe, plain spur. | 48x12 Gould & Eberhardt, spur. |
| 33" Gould & Eberhardt, spur. | 60" Gould & Eberhardt, spur. |
| 36" Gould & Eberhardt, spur. | 24" Fellows gear shaper. |
| 40" Flather, spur. | 36" Fellows gear shaper. |

HAMMERS.

- | | |
|-------------------------------------|---|
| 400 lb. Morgan, single frame. | 1500 lb. Bement Miles, 2 machines. |
| 2000 lb. single frame Bement-Miles. | 600 ton steam hydraulic press, Alliance Machine Co. |
| 3300 lb. single frame Bement-Miles. | |

GRINDERS.

- | | |
|------------------------------------|-------------------------------------|
| No. 1 Leland & Falconer, wet tool. | Nos. 200 & 210 Heald ring grinders. |
| No. 2 Worcester drill grinder. | No. 3 LeBlond univ. tool & cutter. |
| No. 11 Brown & Sharpe, plain. | No. 3 Oesterlein universal grinder. |
| 6"x32" Norton plain grinder. | 10"x36" Landis plain grinder. |

CENTERING MACHINES.

- | | |
|-----------------|----------------------------|
| 3" Binghampton. | 6" Winton, double spindle. |
|-----------------|----------------------------|

MILLING MACHINES.

- | | |
|--|---------------------------------|
| No. 13 Pratt & W. Lincoln type. | No. 3 LeBlond, a. p. f. |
| No. 33 Kemp Smith, Lincoln type. | No. 12 B. & S. Lincoln type. |
| No. 2 Brown & Sharpe, plain, cone drive. | No. 13 B. & S. Lincoln type. |
| | No. 4 Blake & Johnson vertical. |

SHAPERS.

- | | |
|-------------------------------|--------------------------------------|
| 15" Hendey, friction. | 20" Smith & Mills, dbl. grd., crank. |
| 18" Steptoe, single geared. | 22" Smith & Mills, shifting belt. |
| 20" Kelly, back geared crank. | 24" Walcott, shifting belt. |

SECOND-HAND MACHINERY

Notch & Merry weather Machinery Co.,—Continued.

PLANERS.

16"x16"x4' Hendey.
22"x22"x4' New Haven.
22"x22"x7' Gray.
24"x24"x8' Powell.
28"x5' New Haven.

30"x30"x10' Whitcomb.
60"x18' Pond, double head.
72"x24' Pond, double head.
12"x26' Pond, four heads.

SLOTTERS.

34" Hewes & Phillips.
32" Hewes & Phillips.

30" Pond.

TURRET LATHES & SCREW MACHINES.

1" Pratt & Whitney, with cut-off rest and automatic chuck.
3"x4" Brown & Sharpe turret.
No. 2 B. & O., w. f., auto. chuck, (2).
No. 2 W. & S., w. f., auto. chuck.
No. 2 Bardons & Oliver, turret, power feed to turret slide.
No. 2 Brown & Sharpe standard screw machine.

3"x36" J. & L. sliding hd. tur. lathe.
14" Drees wire fd. screw machine.
24" Davis chucking machine.
21" Gisholt turret lathe.
No. 2 Foster pl. head turret lathe.
1"x7" Acme screw machine.
2"x24" Jones & Lamson flat turret lathe, cone head.
24"x10" L. & S. screw machine.

AUTOMATICS.

Gridley automatic piston ring mch.
3" Cleveland automatic.
1" Acme automatic.

14" Cleveland automatic.
14" Cleveland automatic.

MISCELLANEOUS.

Band saw, wood, 36"
Centering machine, 3" Binghamton.
Centering mch., 6" Whiton, 2 spdl.
Cold saw, 50" Espen-Lucas.
Cut-off mch., 24" Hurlbut-Rogers.
Cut-off mch., 34" Hurlbut-Rogers.

Cut-off mch., 3" Pratt & Whitney.
Disc grinder, 18" W. & P., dbl. end.
Keyseater, No. 0 Baker.
Keyseater, No. 0 Mitts & M., 1" cap.
Keyseater, 18x14 Morton.
Shears, 36" Toledo, power, 1" cap.

FOR SALE BY

The Chas. A. Strelinger Co.,

96-110 Bates St., Detroit, Mich.

LATHES.

14"x6' Reed, c. r.
16"x8' LeBlond, q. c., c. r.
16"x8' Walcott & Wood, pl. turning.
18"x8' LeBlond, c. r.

18"x10' Reed, c. r.
20"x12' Reed, c. r.
20"x10' Porter, c. r.
24"x12' Porter, c. r.

TURRET LATHES.

2x24 J. & L. flat turret.
3x36 J. & L. flat turret.

No. 6 Warner & Swasey, f. h.

MILLING MACHINES.

No. 2 Cincinnati univ., vert. head.
No. 2 LeBlond plain, vert. head.
No. 2 Becker universal.
No. Owen plain.
No. 3 Hendey plain.

No. 2 Cincinnati plain, high power.
No. 2 Burke plain.
No. 14-A Garvin plain.
No. 24 Brown & Sharpe plain.

DRILLING MACHINES.

8" Barnes, friction disc.
15" Barnes.
26" Barnes, sliding head.
224" Kern, stationary head.

24" Raush, 8-spindle multiple.
25" Kern, sliding head.
25" Kern, high speed, sliding head.

MISCELLANEOUS.

Boring mill, 34" Rogers vertical.
Gear hobber, Farwell.
Gear hobber, Schuchardt & Schutte.
Gear shaper, 24" Fellows auto.
Gear shaper, 36" Fellows auto.
Grinder, disc, No. 6 Gardner.
Grinder, universal, 10x36 Bath.
Grinder, univ., No. 2 Bath, c. equip.
Grinder, universal, No. 3 Landis.
Keyseater, No. 2 Mitts & Merrill.

Planer, 22x22x5 Ames.
Planer, 26x26x6 Brittell.
Press, grd., No. 7 Perkins Model A.
Screw mch., No. 2 Woods tilted tur.
Shaper, plain crank, 14" Springfield.
Shaper, b. g. crank, 16" Smith & M.
Shaper, b. g. crank, 22" Ohio.
Spot welder, 36" Windfield, a. c., 1" capacity.
Thread miller, Pratt & Whitney.

SECOND-HAND MACHINERY

FOR SALE BY

The H. A. Stocker Machinery Co., 566-72 W. Randolph St., Chicago

LATHES.

- | | |
|-------------------------------------|-----------------------------------|
| 7"x32" Stark, c. r. and chucks. | 18"x8" Reed, compound rest. |
| 11"x5" Star, compound rest. | 18"x10" American, q. c. g. |
| 12"x6" Hendy, tool wk. | 18"x10" S. & B., with taper. |
| 14"x5" P. & W., with taper. | 18"x11" Lodge & Davis, taper. |
| 14"x6" Flather, q. c. g. and taper. | 20"x8" Lodge & Shipley, d. b. g. |
| 15"x6" Von Wyck, d. b. g. | 20"x10" Cincinnati compound rest. |
| 16"x6" Cincinnati, relief. attach. | 30"x12" Flather, like new. |
| 16"x8" Hamilton, with taper. | 30"x18" Reed, with chuck. |
| 16"x10" Cm., turret on shears. | 32"x14" Putnam, compound rest. |
| 18"x8" Bradford, c. r. and chuck. | 32"x18" Pittsburg, d. b. g. |

SHAPERS.

- | | |
|------------------------|-----------------------------------|
| 6" Boynton & Plummer. | 24" Stockbridge, power down feed, |
| 17" Barker & Chard. | tilting table, centers. |
| 24" Gould & Eberhardt. | 26" Putnam, triple geared. |

PLANERS.

- | | |
|-------------------|-----------------------------------|
| 22x22x5 Pease. | 40x38x14 Putnam. |
| 26x26x6 Pond. | 42x42x14 Detrick & H., open side. |
| 26x26x8 Whitcomb. | 44x44x12 Pond. |
| 36x36x12 Gray. | |

GRINDERS.

- | | |
|------------------------------------|--------------------------------------|
| No. 1 Cin., univ. cutter & tool. | No. 2 Brown & Sharpe, surface. |
| No. 2 Norton, univ. cutter & tool. | No. 2 B. & S., surface, with mag.ck. |
| No. 2 Bath, univ. cutter & tool. | |

MILLING MACHINES.

- | | |
|-------------------------------|---------------------------------|
| No. 3 1/2 VanNorman, bench. | No. 2 Cincinnati universal. |
| No. 2 Burke, column. | No. 10 Pratt & Whitney, hand. |
| No. 1 1/2 B. & S., universal. | No. 2 B. & S., plain. |
| No. 2 B. & S., plain. | No. 2 Cincinnati, plain. |
| No. 2 Owen, plain. | No. 32 Kempsmith, Lincoln type. |
| No. 1 Y. B. & S., plain, (2). | No. 12 Garvin, plain, (4). |
| No. 2 LeBlond, plain. | |

DRILLING MACHINES.

- | | |
|---------------------------------|---|
| Henry & Wright, single spindle. | 20" Davis, b. g. & p. f. |
| Henry & Wright, 6 spindle. | 21" Aurora, b. g., p. f. & tap. attach. |
| Barr, 4 spindle, (6). | 28" Cincinnati-Bickford, comp. tbl. |

POWER PRESSES.

- | | |
|---------------------|---|
| No. 3 Walsh, (2). | No. 3 Bliss, double crank. |
| No. 3 Am. Can Co. | No. 18 Bliss. |
| No. 3 Consolidated. | No. 430 McDonald, double crank. |
| No. P5 Ferracute. | Humphrey, single end punch and |
| No. 5 1/2 Walsh. | shear, 36" thr., 1 1/2"x1 1/2", like new. |

PROFILER.

- No. 2 Garvin 2-spindle, like new.

SCREW MACHINES.

- | | |
|----------------------------|--------------------------------|
| No. 1 Warner & Swasey. | No. 4 Bardons & Oliver. |
| No. 2 Warner & Swasey. | No. 51 National automatic. |
| No. 2 1/2 Pratt & Whitney. | 6" Cleveland automatic. |
| No. 2 Woods, lot of tools. | 1 1/2"-4" Cleveland automatic. |
| No. 3 Warner & Swasey. | No. 00 B. & S. automatic. |

BORING MILLS.

- | | |
|---------------------------|---------------------------|
| 37" Niles vert., 2 heads. | 34" Colburn, turret head. |
| 42" Buliard, 2 heads. | No. 3 Binsse, horizontal. |

GEAR CUTTERS.

- | | |
|------------------------|---------------------------------|
| 42" Gould & Eberhardt. | 20" Brown & S., spur and bevel. |
| 30" Flather. | 12" Reynolds hobber. |

MISCELLANEOUS.

Bolt cutters, turret lathes, pipe machines, cutting-off machines, cold saws, hack saws, hammers, bulldozers, motors, viz., Brown & Sharpe surface plates, bench plates, die filers.
Everything used in the shop.

SECOND-HAND MACHINERY

FOR SALE BY

Marshall & Huschart Machinery Company,

Chicago

Indianapolis

St. Louis

BOLT CUTTERS.

1" Acme, double head.
1" National, double head.

2" National, single head, motor drive.

BORING

MILLS.
Lucas & Gleim horiz., table 16"x36".
No. 2 Rockford horiz., table 24"x72".
30" Bullard vertical, belt feed.
30" Bullard vertical, geared feed, thread cutting.
30" Baush, with 3-jaw chuck.
34" King, 3-jaw chuck.

37" Baush, 2 swivel hds., 4 chuck jaws.
42" Bullard, one plain, one swivel turret head, 3-jaw chuck.
48" swing Barrett horizontal.
48" car wheel boring machine, for 36" wheels.
52" Rogers & Hemphill, 2 swivel hds.

DRILLING MACHINES.

10-sp. Natco multiple, cap. 5-16".
12-sp. Western multiple, cap. 1".
3-spindle Barr sensitive.
2-spindle Kokomo sensitive.
3-spindle 20" Rockford gang.
4-spindle Foote-Burt gang.
194" Putnam upright, power feed.
20" Prentice, wheel and lever.
20" National, wheel and lever.
23" Rockford, stationary head, back gears.

24" Mechanics sliding hd., fric. dr.
24" Sibley & Ware, stationary head, b. g., p. f., automatic stop.
32" Hamilton, b. g., p. f.
34" Lodge & Davis, b. g., p. f.
42" Barnes, b. g., p. f.
24" Fosdick plain radial.
30" American radial, with tapping.
44" arm Alfred Box radial.
5 Western full universal radial, gear box drive.

GEAR CUTTING MACHINES.

6" Bilgrim gear generator.
16" Bilgrim gear generator.
18" Brainerd, spur and bevel.
22" Gould & E., spur and bevel.
30"x7" Gould & Eberhardt, new type, spur gear.

30" Flather, spur gear.
36" Fellows gear shaper.
50"x10" Gould & E., spur and bevel.
Norris 4-spindle multiple semi-automatic, cap. 10"x14", for spur, bevel, and mitre gears, 3 diametral pitch.

GRINDERS.

No. 8 Besly disc grinder.
No. 14 Besly disc, size No. 14-30-G, with discs, press, etc.

No. 2 Diamond face grinder.
19"x34" Thompson universal.
No. 6 Rivett precision grinder.

ENGINE LATHES.

9"x24" Barnes, with chuck.
14"x6" Lodge & Shipley, q. c. g.
14"x6" Whitcomb-B., taper and ck.
18"x5" Putnam, compound rest.
18"x6" American, compound rest.
18"x6" Lodge & Davis, plain rest.
18"x8" Lodge & Shipley, q. c. g.
20"x8" Lodge & Davis, with chuck.
21"x11" Lodge & Davis, c. r., taper.

25"x20" Sellers, compound rest.
26"x12" and 26"x14" Star, compound rest, regular attachments.
26"x21" Pond, raised to 42", with compound rest.
36"x40" Niles, t. g., compound rest, two steady rests.
Fitchburg Lo-swing lathe, single pulley drive, two carriages.

TURRET LATHES AND SCREW MACHINES.

12" Foster & Kimball plain head turret lathe, double cut-off rest.
14" Garvin, with pan, 1 1/2" hole in sp.
16" Warner & Swasey, plain head.

21" Gisholt heavy turret lathe.
24" Conradson heavy turret lathe.
1" Cleveland auto. screw machine.
2" Cleveland auto. screw machine.

MILLING MACHINES.

No. 12 Brown & Sharpe plain.
20"x7"x17" Oesterlein plain.
No. 3 Owen plain.
No. 2 Cincinnati, plain cone type.

No. 4 Cincinnati, plain cone type.
No. 4 Cincinnati vert., high power.
No. 5 Kempsmith plain, all pwr. ids.
Newton duplex, table 6'5"x12 1/2".

PLANERS.

22"x22"x5' Pond, parallel drive.
30"x30"x10' Gleason.

36"x36"x10' American, one head.

SHAPERS.

26" American, triple geared, shifting belt.

24" Smith & Mills, crank.
34" Walcott geared, shifting belt.

TAPPING MACHINES.

Burke horizontal, 1/2" capacity.
Baker Bros. 4", type F-III.

Baker Bros. 10", type K-11.

SECOND-HAND MACHINERY

FOR SALE BY

Niles-Bement-Pond Company,

111 Broadway, New York.

Located at Chicago, Boston and New York.

Send for Catalogue No. 18.

LATHES.

13x6 P. & W., r. & f., taper.
14x6 Prentiss.
15x7 speed lathe.
16x10 P. & W., r. & f. & t.
18x6 Pond, turret tool post.
18x7 Pond, turret tool post.
19x8 Pond, compound rest.
20x10 Flather, c. r.
20x14 LeBlond c. r., taper.

22x12 Niles, with taper.
22x22 Niles.
28x12 Pond, compound rest.
30x16 Pond, compound rest.
32x12 Pond, compound rest.
36x14 Niles, compound rest.
36x17 Pond, 220 v. motor drive, taper.
40x16 Bement, b. g., not screw cutting.
44" P. & W. pulley lathe.

SCREW MACHINES, TURRET LATHES, ETC.

No. 3, 2 15-16" Niles screw mche.
2x26 P. & W. piston and piston ring equipment.
21" Gisholt, turret.
24-27 Conradson semi-automatic turret, 2 3-16" hol. sp.
28" Milwaukee turret, 4 1/2 in. hol. sp.
4" Hartford, automatic pin machine.

4" P. & W. automatic screw mach.
4" P. & W. 2 sp. automatic screw machine.
1" Acme old style 4-sp. automatic.
1" single turret Spencer automatic.
21-32" No. 2 Brown & Sharpe automatic screw machine.

BORING MACHINES.

30" turret hd., b. & t. mill, Colburn.
37" Niles, b. & t., 2 heads.
5" Niles, 2 heads.
6" Pond, 2 heads, with slotting att.
7" Niles, 2 heads.
10" Niles, 2 hds. 220 v., motor drive.
10-16" Niles b. & t., 2 heads.

10-16" Betts, 220 v., d. c., motor dr.
2" sp. Kelly hor. bor. and drill.
3 1/2" sp. Bement hor. bor. & drill.
5" sp. Niles, floor borer.
96" swing x 10" centers bor. & facing; weight: about 43,000 lbs.

UPRIGHT AND SENSITIVE DRILLS.

13" 1 sp. sensitive, motor dr., 110 v.
10" 3 sp. sensitive, Sigourney.
2 spindle dbl. column sen., Langelier.
17" 4 sp. gang, Jones & L.
21" Aurora, b. g., p. f., sta. head.
30" sli. head, Gould & Eberhardt.
36" sliding head, Gould & E.

4 spindle Bement, multiple, 11" between housings.
No. 11 multiple drill, P. & W.
10 sp. adjustable R. & W., capacity 1 1/2" holes in 37" circles, belt or motor; weight: 30,000 pounds.

RADIAL DRILLS.

4 1/2" semi-radial, Barr.
4" Niles, plain.
4" Niles, univ.
5" Niles, plain.
5" plain, motor, Pond.

5' 6" universal, Niles.
6" heavy plain, Pond.
6' 10" semi-universal, Niles.
7' 6" full universal, Niles.
Univ. portable radial, Prentice.

MILLERS AND GEAR CUTTERS.

No. 1 Duplex Van Norman.
24x7 table, plain, Becker.
No. 1 B. & S. plain, late model.
No. 1 1/2 LeBlond, plain.
No. 3 LeBlond, plain.

No. 4 LeBlond, plain.
43-9 1/2 No. 3 Cincinnati plain, b. g.
6x80 thread miller, P. & W.
36" spur gears, Pond.
72" spur gears, Niles.

PLANERS.

22x22x6 Harrington.
26x26x7 Niles, heavy type.
26x23x16 Miles, 2 hds.
30x30x6 Pond, 1 head.
30x30x8 Pond, 2 heads.
30x30x11 Niles, 1 head.
30x30x24 Sellers, 2 hds.
36x36x14 Pond, 4 heads.
36x36x20 Pond, 3 hds.
42x42x20 Miles, 3 hds.

48x48x12 Niles, 3 hds.
48x48x16 Pond, 4 heads, heavy.
48x48x20 Sellers, 3 hds.
72x60x20 Niles, 2 hds.
86x86x30 Pond, 4 hds., revers. motor dr.
96x96x30 Niles, 4 heads.
10' x 10' x 30' Niles, 4 heads.
10' x 10' x 36' Betts, 4 heads, 50 h. p., 220 v., motor drive.

RAILROAD MACHINERY.

36" Niles car wheel borer.
42" Niles heavy car wheel lathe.
46" car wheel lathe, Bement.

Bement and Niles dbl. axle lathes.
Putnam double axle lathe ex. heavy.

SECOND-HAND MACHINERY

Niles-Bement-Pond Company—Continued.

SHAPERS AND SLOTTERS.

- | | |
|------------------------------------|---|
| 10" crank shaper, P. & W. | 20" Bement, 220 v. motor, traveling head, like new. |
| 10" crank shaper, Miles. | 12" crank slotter, Bement. |
| 12" crank shaper, Bement. | 14" crank slotter, Niles. |
| 18" double trav. head, Cincinnati. | |

MISCELLANEOUS.

- | | |
|-----------------------------------|-------------------------------|
| Bar cut-off saw, 22" diam. blade. | Grinder, plain, 5x32" Landis. |
| Cut-off machine, 34" P. & W. | Grinder, univ., 10x30 Landis. |
| Cut-off machine, 44" Starr. | Grinder, 12x96" Springfield. |
| Grinder, wet tool, Gisholt. | Saw grinder, automatic. |
| Grinder, drill, 3" Sellers. | |

FOR SALE BY

W. L. Perkins Machinery Co.,

30 Church St., New York

LATHES.

- | | |
|--------------------------------------|-------------------------------------|
| 14"x8' Sebastian gap lathe, c. rest. | 18"x8' Hamilton, compound rest. |
| 16"x6' Hamilton, compound rest. | 18"x10' Rahn-Carpenter, comp. rest. |
| 16"x8' Reed, compound rest. | 20"x10' Putnam, compound rest. |

MISCELLANEOUS.

- | | |
|--------------------------------------|--------------------------------------|
| Boring mill, 30" Bullard, tur. head. | Pipe machine, 34" Saunders. |
| Key seater, No. 1 Baker Bros. | Screw mche., No. 2 W. & S., wire fd. |
| Milling mche., No. 14 Garvin univ. | Planer, 24"x24"x8' Pond. |
| Milling mche., No. 3 Becker-B univ. | Shaper, 14" Juengst, horiz., crank. |
| Milling mche., No. 2 B. & S. univ. | Shaper, 12" Walcott, geared. |

FOR SALE BY

Wm. C. Johnson & Sons Machinery Co.,

210-212 Washington Ave.,

St. Louis, Mo.

LATHES.

- | | |
|---------------------------------|---------------------------------|
| 14"x 8' Von Wyck, quick change. | 20"x 8' Whitcomb-Blaisdell. |
| 14"x 8' American, quick change. | 80"x10' centers, heavy turning. |
| 14"x12' Lodge & Davis. | 32"x10' Bradford. |
| 18"x 8' Rahn & Carpenter. | 32"x19' American, quick change. |
| 18"x10' Porter. | |

SHAPERS AND PLANERS.

- | | |
|------------------------------------|----------------------|
| 24"x24"x6' Lodge & Davis. | 32"x32"x14' Niles. |
| 24"x24"x8' American. | 36"x36"x8' Hamilton. |
| 24"x24"x8' Lodge & Davis, 2 heads. | 44"x44"x14' Niles. |
| 28" American, back geared. | |

DRILLING MACHINES.

- | | |
|-----------------------------|---------------------------|
| 20" Barnes. | 32" Aurora, sliding head. |
| 28" American, sliding head. | 4' arm Fosdick. |

BORING MILLS.

- | | |
|---------------------------|---|
| 34" Gisholt, turret head. | No. 1 Barret boring machine. |
| 36" two heads. | 72" Niles Corliss engine cylinder boring machine. |
| 72" Niles, one head. | |

AIR COMPRESSORS.

- | | |
|---------------------|-------------------------------|
| 6x6 belted. | 10x10x10 steam driven. |
| 8x8 belted. | 12x12x14 steam driven. |
| 9x9x9 steam driven. | 500' and 1,000' steam driven. |

MISCELLANEOUS.

- | | |
|-------------------------------------|---|
| Angle shear, dbl., size B, L. & A. | Jack, hydraulic, 50 ton. |
| Bending rolls, No. 14, cap. 96". | Jacks, simplex, 12 and 15 ton. |
| Bolt cutter, 14", double head. | Miller, No. 34 Fox. |
| Brake, No. 16 Robinson, cap. 10'. | Pipe machine, 4" Borden. |
| Bulldozer, No. 4 Williams-White. | Pulley lathe, 30" Stevens. |
| Grinder, 10"x72" Landis. | Punch press, heavy, dbl. housing. |
| Grinders, surface, No. 2 Brown & S. | Screw machine, automatic 9-16". |
| Hammer, 100 lb. Bradley. | Squaring shear, cap. 3" plates, 6' knife, 25" gap, with multiple punching dies. |
| Hammer, steam, 350 lb. | |
| Hammer, steam, 800 lb. | |

SECOND-HAND MACHINERY

FOR SALE BY

The Osborne & Sexton Machinery Co., . . . Columbus, Ohio.

LATHES.

13"x5' Reed, hollow spindle.	20"x12' cabinet legs, rebuilt.
14"x6' Springfield, hollow spindle.	24"x10' LeBlond, turret on ways.
14"x8' thoroughly rebuilt.	28"x10'
15"x6' Putnam and Wood-Light, (2).	38"x14' Fifield, rebuilt.
18"x10' Pond, rebuilt.	28"x48"x13' centers, Harrington.

SHAPERS AND PLANERS.

11" Gould Brothers.	30" Morton, draw cut.
16" Smith & Mills.	20x20x4' single head.
16" Steptoe.	32x32x6' and 6' both Grays.

TURRET LATHES AND SCREW MACHINES.

12" Pratt & Whitney screw machine.	18" American Fox lathe.
15" Pratt & Whitney, turret.	23" Fay chucking lathes, (2).
16" Warner & Swasey, grd. head.	5" bar turret, Pratt & Whitney.

DRILLING MACHINES.

22, 24 and 30" Hamilton.	24" heavy duty Foote-Burt.
4 spindle gang, sensitive.	4-spdl. Niles, 2" capacity.
4-spdl. multiple, Foote-Burt.	30" radial, plain, (2).

MISCELLANEOUS.

Cold saw, Lucas, 8" capacity.	Miller, Garvin No. 2½ universal.
Disc grinder, double end, Besly.	Press, drawing, Q. & C. 4500 lbs.
Hammers, fric. bd., 3,000, 400 & 3,000 lbs.	Press, o. b., No. 3 Crosby.
Hammer, helve, 25 & 60 lb. Bradley.	Rolls, shovel blanking, Toledo.
Miller, No. 2 Cincinnati plain.	Valve miller, Warner & Swasey.

FOR SALE BY

Vonnegut Machinery Co., 121 S. Meridian St., Indianapolis, Ind.

MOTORS.

5, 10, 25, 30, 35 h.p., 220 volt, 60 cy., 3 ph. 10 and 20 h. p., 220 volts, d. c.

GRINDERS.

12x32 Landis, plain.	No. 200 Heald, ring.
No. 1 Norton, universal tool.	No. 210 Heald, ring.
No. 3 Brown & Sharpe, tool.	No. 60 Heald, cylinder.

DRILLING AND TAPPING MACHINES.

3-spindle Baker.	4 and 5-spindle Barr.
4-spindle Gardam.	2, 3 and 4-spindle Reed.
No. 1 Garvin taper.	

MILLING MACHINES.

No. 2 Garvin, duplex.	No. 6 Whitney, hand.
No. 2 Van Norman, duplex.	No. 23 Fox, hand.
No. 2½ LeBlond, plain.	No. 12 Pratt & Whitney.
No. 1 Cincinnati, universal.	No. 2 Garvin, Lincoln.
No. 1 Grand Rapids, plain.	

TURRET LATHES AND SCREW MACHINES.

11" Pratt & Whitney.	24" Davis.
16" Davis & Egan.	24x8 Lodge & Shipley.
16" Acme.	14"x15" Cleveland automatic.
18x6 Lodge & Davis.	

LATHES.

13x6 Willard.	18x10 Lodge & Shipley.
14x6 Lodge & Shipley.	16x8 Greaves-Klusman.
15x6 Sebastian.	18x8 Greaves-Klusman.
14x6 Carroll-Jameson.	20x8 Pond.
16x8 Lodge & Shipley.	20x10 Reed.
18x8 Lodge & Shipley.	22x10 Reed.

SHEET METAL MACHINERY.

Large burring machine, Niagara.	60" Rotary shear, H. Collier Smith.
42" Folder, Niagara.	8" Brake, Robinson.
No. 208 Slitting shear, Niagara.	

MISCELLANEOUS.

Arch press, Billings & Spencer.	Saw, No. 1 Cochrane-Bly.
Boring machine, 34" Colburn.	Shapers, 12" Steptoe.
Punch presses, P-2 & P-3 Ferracute.	

SECOND-HAND MACHINERY

FOR SALE BY

Prentiss Tool & Supply Co., New York, Boston, Buffalo, Syracuse.

BORING MILLS.

30" Bausch, turret head.
36" Bullard, vertical, turret.
6' Pond, vertical, 2 heads.
9' Pond, vertical, 2 heads.

86" Bullard, vertical, 2 hds.
No. 2B Binsse, horizontal.
No. 5C Binsse, horizontal.
Hoefler, horizontal.

DRILLING MACHINES.

1 spindle Reed sensitive.
3 sp. Avey, high speed.
20" & 23" Barnes, back geared.
22" Aurora, sliding head.

25" 28" & 30" Snyder, sliding hd.
34" Universal radial.
No. 1 Baker Bros., high speed.
60" & 48" Bement radials.

GRINDERS.

No. 60 Heald, cylinder.
6x32, 14x72 and 18x168, Norton.

No. 24, 12"x60" Landis, plain.
24" C Bath, universal.

MILLING MACHINES.

Nos. 1, 1½ & 2 Cincinnati, universal.
No. 5 Hendey, Lincoln.
No. 1 Brown & Sharpe, univ.
No. 1 Milwaukee, universal.

No. 5 Brown & Sharpe, plain.
No. 14 Garvin, plain.
No. 24 Brown & Sharpe, plain.
No. 4 Cincinnati, plain.

LATHES.

9"x44" Star, power.
11"x5' Prentice Bros., c. r.
12"x5' Hendey, tool room.
14"x6' Lodge & Shipley.
16"x6' Lodge & Shipley, patent hd.
16"x8' Prentice Bros., compound rest, power cross feed.
16"x8' Putnam, compound rest.
16"x10' Reed, compound rest.
18"x8' Prentice Bros.

18"x10' Hendey, quick change.
20"x8' Lodge & Shipley, 3 step.
20"x10' Hendey, taper.
22"x8' Reed, compound rest.
24"x10' Reed, compound rest, power cross feed.
27"x10' Flather, compound rest.
26"x16' Pittsburgh, quick change.
30"x20' Lodge & Shipley, patent.
36"x14' Fay & Scott, triple geared.

PLANERS.

15"x15"x 3' Pratt & Whitney.
30"x30"x10' Bement, 2 heads.
36"x36"x 8' Pond, 1 head.
36"x36"x12' Lodge & Davis, 2 hds.
38"x38"x12' Gray, 2 hds.
42"x42"x14' Pond, 2 heads.

48"x48"x10' Powell, motor drive.
42"x42"x14' Woodward & Powell, 4 heads.
60"x50"x10' Gray, 2 heads.
71"x69"x14' Pond, 2 hds.
84"x84"x20' Niles, 3 hds.

HAMMERS.

100 lb. Bradley, compact.
1200 lb. Billings, drop.

1000 lb. Pratt & Whitney, drop.
600 lb. Morgan, steam.

PRESSES.

No. 4 Mossberg & Granville.
No. C-82 Ferracute, notching.

No. 2½ V. & O., inclineable.
E 12 Ferracute, inclined.

SCREW MACHINES.

1"x10" P. & W., wire feed.
No. 2, 1" Garvin, wire feed.
No. 2 P. & W., wire feed.
No. 2½ P. & W., wire feed.
2½" American, heavy.
Nos. 3 & 55 National-Acme auto.

2½" & 3" Gridley auto.
1, 1½ & 2" Cleveland auto.
1, 1½ & 2" Cleveland auto.
No. 12, 4" B. & O., motor driven.
20"x8' Fay & Scott.

SHAPERS.

8" Gould & Eberhardt.
16" Gould & Eberhardt.
24" Gould & Eberhardt.

26" Gould & Eberhardt.
28" Juengst, crank.

MISCELLANEOUS.

Angle shear, 6" Hilles & Jones.
Bolt cutter, 2" Acme.
Broaching machines, Nos. 3 and 4 LaPointe.
Cold saw, 9" Fspen-Lucas.
Gas blowers, Nos. 1, 3 & 4 American.
Gear cutters, 16", 24", 36" and 48" Gould & Eberhart.
Gear cutter, 36" Cincinnati.

Gear shaper, 36" Fellows.
Pipe machine 6" Armstrong.
Pipe machines, 3", 4" and 8" Jarecki.
Punch and shear, Hilles & Jones.
Riveter, Greiner.
Screw slotter, National-Acme.
Slotters, 10" and 18".
Stake riveter, 50" Rock River.

SECOND-HAND MACHINERY

FOR SALE BY

Bath Grinder Co.,

Fitchburg, Mass.

UNIVERSAL GRINDER.

One rebuilt No. 1, 10"x20" Bath universal grinder, with automatic traverse feed and equipment for cutter and reamer grinding; price, \$450 00.

FOR SALE BY

Brown-McDonald Machinery Co.,

906-908-910 North Market Street, St. Louis, Mo.

LATHES.

15"x6' Sebastian, h. s., comp. rest.

14", 16" & 18" Monarch, new, (5).

16"x6' American Fox, b. g.

16"x6' Hamilton, h. s.

18"x8' Porter, h. s., comp. rest.

18"x8' LeBlond, h. s., comp. rest.

32"x12' American, h. s., comp. rest.

Speed lathes, all sizes, (6).

DRILLING MACHINES.

12" Acme, sgl. spdl., cap. $\frac{1}{2}$ ".

Fox, 2-spindle, cap. $\frac{1}{2}$ ".

Reed, 3-spindle, cap. $\frac{1}{2}$ ".

20" Lodge & Davis, w. & l.

22" Snyder, b. g., p. f.

28" Barnes, b. g., p. f., with tap. att.

36" Radial, Gang make.

MISCELLANEOUS.

Brake, 8' Robinson, cap. 20 gauge.

Gear cutter, No. 1 Dwight-Slate.

Gear cutter, No. 11 Dwight-Slate.

Hack saw, No. 1 Racine high speed.

Press, No. 33 Swaine.

Large stock of sheet metal tools consisting of Square Shears, Folders, Seamers, Beaders Crimpers, etc.

Presses, foot, No. 3 Swaine, (2).

Screw machine, No. 2 Pratt & W.

Shaper, 17" Economic.

Shear, pwr. sq., 8' Bertsch, cap. 16 ga.

Tapping machine, No. 1 Wells.

FOR SALE BY

A. D. White Machinery Co.,

108-114 N. Jefferson St., Chicago

LATHES.

15"x 8' Von Wyck.

16"x 6' Fay & Scott.

18"x 8' Walcott.

24"x10' Lodge & Shipley, q. c.

28"x12' Fifield.

28"x25' Putnam.

DRILL PRESSES.

No. 1 Barr sensitive, (3).

28" Bickford, sliding head.

30" Kerkhoff, sliding head.

32" Bickford, sliding head.

34" Barnes, sliding head.

36" Mueller radial.

40" Aurora radial.

20" Barnes 4 spindle gang.

8-spindle Valley City multiple.

12-spindle Baush multiple.

PLANERS.

24"x 6' Pond.

26"x 8' Gray.

28"x 8' Gray.

32"x 8' Betts.

35"x12' Niles.

38"x16' Gray.

SCREW MACHINES AND TURRET LATHES.

16" No. 3 Pearson screw machine.

No. 2 P. & W. screw machines, (2).

No. 3 P. & W. screw machine.

No. 2 Garvin screw machine.

22" Lodge & Shipley turret lathe.

21" Gisholt, big bore type.

PUNCH PRESSES AND SHEARS.

No. 5 Niagara, o. b. l.

No. 45 Crosby, open back.

No. 3 Ferracute, double action.

King power forcing press.

Nos. 242 & 152 Niagara pwr. sq. sh.

No. 165 Bliss slitting sh., circle att.

MISCELLANEOUS.

Bolt cutters, National 1 $\frac{1}{2}$ & 3" s. hd.

Grinder, Yankee drill, style "B".

Grinder, No. 70 Heald internal.

Grinder, disc, 30" Ransom, 7 discs.

Grinder, cutter, H. G. Barr.

Hobbers, Farwell, No. 1, (3).

Hammer, power, 50 lb. Dienelt.

Keyseater, No. 2 Mitts & Merrill.

Keyseater, 16" Morton, portable.

Miller, No. 12 Garvin plain.

Miller, No. 9 Kempsmith plain.

Miller, No. 2 Cincinnati, universal.

Miller, No. 6 Grant Mfg. Co.

Miller, No. 3 Garvin, duplex.

Pipe machine, 2" Jarecki.

Riveter, 3-16" Adt.

Shapers, 15", 16" and 24".

Tapper, No. 2 Garvin horizontal.

SECOND-HAND MACHINERY

FOR SALE BY

Rumely-Wachs Machinery Co., 121 N. Jefferson St., Chicago, Ill.

ENGINE LATHES.

- | | |
|---------------------------------|-----------------------------------|
| 16"x 6" Hamilton, q. c. | 21"x 10" Bradford. |
| 16"x 6" F. E. Reed. | 24"x 10" Schumacher & Boye, q. c. |
| 16"x 8" American, q. c. taper. | 24"x 24" Fifeild. |
| 18"x 8" F. E. Reed, taper. | 28"x 10" American. |
| 18"x 8" Hamilton. | 30"x 14" American. |
| 18"x 10" Rahn-Carpenter. | 30"x 20" Lodge & Shipley, q. c. |
| 20"x 8" Draper. | 36"x 12" Schumacher & Boye. |
| 20"x 10" Lodge & Shipley, q. c. | 36"x 14" Fifeild. |

UPRIGHT DRILLS.

- | | |
|-------------------------------|---------------------------------------|
| 20" Davis, b. g. | 28" Sibley & Ware, sliding head. |
| 21" Cincinnati. | 28" Barnes, sliding head. |
| 22" Lodge & Davis. | 31" Barnes, sliding head. |
| 22½" Barnes, b. g. | 32" Cincinnati, sliding hd., tapping. |
| 23" Rockford, sliding head. | 24" Baker Bros. heavy duty. |
| 24" Cincinnati, sliding head. | 40" Lodge & Davis, sliding head. |

RADIAL DRILLS.

- | | |
|---------------------------------|----------------------|
| 3" Fosdick, plain, tapping att. | 4½" Bickford, plain. |
| 4" Fosdick, plain, tapping att. | 8" Prentice, plain. |

SHAPERS.

- | | |
|-------------------------|-------------------------------------|
| 15" Hendy, friction. | 16" American, b. g. crank. |
| 16" Juengst, crank. | 20" Kelly, crank. |
| 16" Stockbridge, crank. | 24" Gould & Eberhardt, b. g. crank. |

PLANERS.

- | | |
|-----------------------------|-----------------------------------|
| 16"x 16"x 4" Lathe & Morse. | 36"x 36"x 8" Fitchburg. |
| 22"x 22"x 5" Wheeler. | 36"x 36"x 8" American, two heads. |
| 24"x 24"x 6" Pond. | 36"x 35"x 15" Woodward & Powell, |
| 30"x 30"x 8" Putnam. | (frog and switch.) |

MILLING MACHINES.

- | | |
|-----------------------------------|-------------------------------------|
| No. 1 Brown & Sharpe, universal. | No. 2 Cincinnati, plain. |
| No. 1 LeBlond, universal. | No. 2-H Brown & Sharpe, plain. |
| No. 1 Brown & Sharpe, plain, (3). | No. 3 Kempsmith, plain. |
| No. 1-v Brown & Sharpe, pl., (6). | No. 3 Cincinnati, plain, (2). |
| No. 21 Garvin, (2). | No. 3 Newton, plain. |
| No. 2 Brown & Sharpe, plain. | No. 3 Pratt & Whitney, plain, (2). |
| No. 2 Kempsmith, plain. | Nos. 3, 4 and 4-B Becker, vertical. |

SCREW MACHINES.

- | | |
|------------------------------------|--------------------------------------|
| No. 1 Garvin, ½". | No. 12½ Garvin, power feed, 2". |
| No. 1 Brown & Sharpe. | No. 6 Warner & Swasey, pwr. fd. 2½". |
| 4x4½" Pratt & Whitney. | ½" Pratt & Whitney, automatic. |
| 1x10" Pratt & Whitney, power feed. | No. 00 Brown & S., automatic. |
| 14" Bardons & Oliver, power feed. | 6 Stehley, automatic. |
| 1-5-16" Foster, (2). | |

TURRET LATHES.

- | | |
|-----------------------------------|---------------------------------|
| No. 3 Bardons & O., Fox Monitor. | 13" Gisholt, (new). |
| 18"x 6" Springfield, universal. | 21" Gisholt. |
| 2x24" Jones & Lamson, sldg. head. | No. 22½ Garvin. |
| 18"x 6" Lodge & Davis, (2). | 24" Conradson. |
| 18" Windsor. | 25" Warner & Swasey, universal. |

PRESSES.

- | | |
|--------------------------|-------------------------------------|
| No. 18 Bliss, o. b. i. | No. 30 Bliss, arch. |
| No. 19 Bliss, o. b. i. | No. 6 Baurath, geared, o. b. i. |
| No. 42 Bliss, o. b. i. | No. 12-A Adriance, drawing. |
| No. 119 Crosby, o. b. i. | No. 2 Billings & Spencer, trimming. |

MISCELLANEOUS.

- | | |
|---------------------------------------|---------------------------------------|
| Boring mill. 30" Bullard. | Keyseaters, Nos. 1 & 2 Davis. |
| Boring mills. 42" Colburn & Bullard. | Keyseaters, Nos. 2 & 3 M. & M. |
| Boring mill, horiz., No. 1 Barnes. | Keyseater, No. 3 Baker. |
| Gear cutters, 26" & 48" B. & S. auto. | Punch, Kling Bros. 19" throat. |
| Grinder, plain, No. 1 Landis. | Thread miller, 6x48" Pratt & Whitney. |
| Grinder, plain, 10x50" Norton. | |

Write for complete list of tools.

SECOND-HAND MACHINERY

FOR SALE BY

McCoy & Brandt, . . . 410 House Building, Pittsburgh, Pa.

Bolt cutters, 14", 3" single, 2" dbl.
Boring & facing mch., No. 5 Barrett.
Crane, 40-ton, 60' span, 220 v., d. c.
Grinder, 156" Bridgeport auto. knife.
Hammer, 75 lb. Bradley, upright strap
Heading and forging mchs., 14", 3".
Motors, 5 and 20 h. p., 3-60-220.
Motors, 20 and 75 h. p., 2-60-220.
Motor, 80 h. p. Allis-Chalmers, 3-60-220
Motors, 600 h. p. Westin'g 3-25-440.
Motors, 37 and 225 h. p., 3-25-440.
Pipe machines, 12" Stover, 3" Acme.
Presses, Bliss Nos. 734, 742, 754.

Press, Bliss No. 52, straight sided.
Press, Bliss No. 405 spl. toggle.
Presses, Ferracute Nos. D-55 and
DG-56.
Press, Ferracute No. S-132, geared.
Press, No. 2 B. & S., trimming.
Press, Niagara No. 65-C, (multiple
punch or shear).
Press, Toledo No. 65, spl. cam
drawing.
Press, Bliss No. 133, double crank.
Shear, guillotine type, 4", 5" squares.
Shears, alligator, 14", 24", 4", 5" sq.

All good. Details upon request.

FOR SALE BY

Western Machinery Co., . . . 610 Baymiller St., Cincinnati, Ohio

LATHES.

15"x6' Cisco, quick change.
16"x6' Bement, c. r., \$145.
16"x8' Lodge-Barker..... 108.
17"x6' Gray, c. r. 163.
18"x8' Lodge & Davis, c. r. 225.
18"x10' Robbins, c. r., blocks to
23", chuck 250.

18"x8' Forsaith..... \$125.
23"x8' Putnam, heavy duty, com-
pound rest, chuck 325.
26"x12' Lathe & Morse, c. r. 275.
26"x12' Niles, c. r., hol. spdl. 350.
26"x17' Putnam, comp. rest..... 350.
32"x22' New York, c. r. 325.

MISCELLANEOUS.

Bolt cutter, 2" National.
Chucking lathe, 37"x8' L. & D. \$250.
Presses, No. 51 Ferracute, (3).
Shop saws, 10" capacity, Globe.
Chain blocks, planer chucks, lathe chucks,
drill presses, milling machines, metal planers.
Write for photographs and
full particulars.

Screw mch., 2" Cleveland auto. \$175.
Shapers, 16"-18"-22"-36" Smith &
Mills.
Turret lathe, Jones & Lamson. \$150.

FOR SALE BY

Girard Machine & Tool Co., 491-493 N. Third St., Philadelphia, Pa.

RADIAL DRILLS.

Prentice Bros. and Bickford 5' and 6' equipped belt or motor drive.

LATHES.

50"x18' Fitchburg standard.
48"x18' Schumacher & Boye, q. c. g.
32"x16' Putnam, standard.
26"x12' Bradford standard.
24"x14' Lodge & Shipley, q. c. g.
18"x14' Schumacher & Boye, q. c. g.

18"x8' Flather, q. c. g.
16"x8' Reed standard.
16"x6' Springfield, q. c. g.
16"x6' Bradford standard.
14"x7' Lodge & Shipley, standard.
14"x6' American, q. c. g., (5).

SCREW MACHINES.

P. & W. and W. & S. and other makes of turret lathes and screw machines.

BORING MILLS.

38" Baush, vertical, two heads.
36" Bridgeport, vertical two heads.
36" B. & S., with turret head.
30" Bullard, with turret head.

MISCELLANEOUS.

Drill presses, all sizes.
Gear shapers, 36" Fellows.
Grinders, Oesterlein universal.
Grinders, B. & S., Landis & modern.
Hammers, steam.

Milling machines, plain and univ.
Milling machines, vertical.
Planers, all sizes.
Punch and shr. comb., No 4 Perkins.
Shapers, crank, 16", 18", 20" & 24".

SECOND-HAND MACHINERY

FOR SALE BY

New Haven Manufacturing Co.,

New Haven, Conn.

We have for sale the following second-hand tools, which are now in use, of modern type and in first class condition, with full and complete equipment:

Boring mills, vertical, 42, 44, 52, and 60", with two heads.

Drills, upright, 28" and 40".

Lathes, 18" to 28" swing, 5' to 14' long.

Planers, 24, 28, 34 and 40" square, 6' to 30' long.

FOR SALE BY

Chas. Molitor Machinery Co.,

215 S. Clinton St., Chicago, Ill.

Arch press, 48", double crank, hvy.

Broaching machine, No. 4 Lapointe.

Gap shear, 15" heavy, 36" square.

Grinder, heavy univ., 13x40 Landis.

Horn press No. 3.

Keyseater, No. 6 Morton.

Keyseater and slotter.

Lathe, 20"x8 1/2" Rahu-Larmon.

Lathe, 20"x10" Springfield.

Lathe, 20"x10" Walcott.

Lathe, 30"x26" Ames.

Tinners' rollers, brakes, shears, punch presses and compressors.

100 other iron and woodworking machines, motors, etc.

Lathe, 33"x12" Prentiss.

Planers, 6' to 12', (5).

Press, geared, Waterbury-F., 4" str.

Press, arch, 30" Bliss.

Press, notching, American Can Co.

Radial drill, 32" Fosdick.

Screw mch., 2 1/2" Warner & Swasey

No. 2, geared friction head.

Shapers, 14" to 32", (8).

Strip wiring & molding mch., Yoder.

Wiring machine, universal, Yoder.

FOR SALE BY

Frank Toomey, Inc.,

127 N. Third St., Philadelphia, Pa.

LATHES.

30"x18" Bement-Miles.

27"x21" Pratt & Whitney, taper att.

28"x17" Johnson, taper attachment.

26"x12" Fifeild.

21"x 9" Lodge & Davis.

18"x 8" LeBlond, turret attach.

18"x 8" Reed.

16"x 6" Hendey-Norton, cone head,

taper attachment.

16"x6" Reed, taper attachment.

14"x8" Hendey-Norton.

14"x5" Lodge & Shipley, taper att.

PLANERS.

60"x60"x14" Pond, two heads.

60"x60"x14" Sellers, 4 heads.

33"x33"x12" Woodward & Powell.

12" Moore crank planer.

24"x24"x6" Putnam.

SHAPERS.

20" Gould & Eberhardt.

16" Smith & Mills.

16" American, back geared.

12" Bement.

MILLING MACHINES.

36"x12" slab, heavy pattern.

No. 3 Kemp Smith plain.

No. 3 Becker-Brain d'pl., table 12x42.

No. 1 Brainard plain, table 12x48.

No. 3 Becker-Brainard universal.

No. 3 Becker-B. univ., vertical att.

MISCELLANEOUS.

Bolt cutter, 1 1/2" National.

Boring mill, 72" Bickford, 2 heads.

Boring mill, horiz., 48" Bement.

Boring & turn. mill, 48" Sellers, 2 hds.

Card cutting presses No. 103, (5).

Drill, 24" Snyder, sliding head.

Hammer, steam, 350 lb. Bement-

Miles, single frame.

Hammer, steam, 3,500 lb. Bement-

Miles, double frame.

Hammer, board drop, 500 lb. P. & W.

Internal grind. lathe, 16x5 Diamond.

Pipe machine, 6" Cox.

Dynamos, motors, engines and boilers.

and second-hand. Send for our stock books.

Pipe machine, 6" Oster.

Pipe machine, 10" Bignall & K.

Pipe machines, 3" and 6" Curtis &

Curtis, hand power, (2).

Presses, combined honing and wir-

ing, No. 22 Adriance, (2).

Pulley boring machine, 60" Har-

ington, upright.

Radial drill, 3' Bickford plain.

Screw machine, No. 12 Garvin.

Shear, single end, 50" throat, 2"

capacity, engine driven.

Turret lathes 1 1/2" and 2" Foster & K.

Wood-working machines both new

SECOND-HAND MACHINERY

FOR SALE BY

J. L. Osgood,

45 Pearl St., Buffalo, N. Y.

Bargain List.

Automatic, 11-16" Cleveland, new.
Cutting-off mch., 4" Hurlbut & R.
Drill, geared, 30" Bickford.
Drill, 6-spindle adjustable.
Grinder, wet and dry, 16", new.
Grinder, universal, No. 2 B. & S.
Lathe, bench, No. 3 Stark.

Lathe, No. 4 Rivet, all attachments.
Screw machine, No. 3 P. & W.
Screw machine, No. 4 W. & S.
Screw machine, No. 1 Garvin.
Screw machine, No. 2 Garvin.
Shaper, b. g., 16" Queen City, new.
Turret lathe, 4" B. & O. No. 12.

HOW

—can our advertisers know that your inquiry comes from Hitchcock's List unless you tell them? When writing them, won't you kindly say that you saw it in Hitchcock's? That will be sufficient.

For Sale

Putnam Planer.

48"x48"x20', Two Heads on Cross Rail.

Radial Drill.

4' Cincinnati-Bickford Plain, Single Pulley
Drive through speed box.

Large Plain Grinder.

Landis 30" Swing, 150" between centers.

Engine Lathe.

36"x14' Fifield, raised to 48", Comp. Rest.

Chandler & Farquhar Company

419-425 Atlantic Ave., Boston, Mass.

"New York's Greatest Clearing-House—J. J. McCabe"

"New York's Lowest Prices"

The Largest Boring Mills

on the market
await your crit-
ical inspection

Big machines of particular excellence, that ought to sell immediately at the low prices they are being offered—to turn over right away.

Had there been no change in the line of work, these machines would have remained with the shop that had them, giving complete and entire satisfaction.

Still in operation, but must be moved at once—

"Niles-Bement-Pond" Upright Boring and Turning Mill, 14-20-ft. swing, extension type, double-head, slotting attachment complete with full regular equipment.

"Niles Tool Works" Upright Boring and Turning Mill, 10-16-ft. swing, extension type, double-head, complete with full regular equipment.

**A large number of other large Tools—
Planers, Drills, Lathes, Turret Lathes, etc.**

All low in price

10'x10'x25' Planer, with four (4) hds., "Niles-Bement-Pond" complete.
72"x72"x14' Planer, with three (3) heads, "Pond Machine Tool Co."
36"x36"x10' Planer, with two (2) heads, "Niles Tool Works."
100" Swing Upright Boring and Turning Mill, double-head, "Bettis Machine Co."
80" Swing Upright Boring and Turning Mill, double-head, "Pond Machine Tool Co."
8-spindle Drill, capacity 1" holes, "Baugh Machine Tool Co."

65" Swing Lathe, 25½' bed, "Pond Machine Tool Co."
19" stroke Slotting Mche., "Bement."
66" throat Punch and Shears, single, "Long & Allstatter," weight about 60,000 lbs.
42" throat Punch and Shears, single, "Hilles & Jones," weight about 45,000 lbs.
3x36—and 2x24—Flat Turret Lathes, "Jones & Lamson."
24" Swing Heavy Turret Lathe double carriage, "Gisholt."

J. J. McCabe, 30 Church St., New York

In replacing our manufacturing equipment, we find the following first class Used Machine Tools, which we offer at attractive prices:

LATHES

16"x 8' Reed.
17"x 6' Gray.
18"x 8' Lodge & Shipley, single pulley driven. (2).
20'x 8' Lodge & Shipley, q. c. g.
20"x 10' Lodge & Shipley, q. c. g.
20"x 12' Lodge & Shipley, q. c. g.
24"x 8' Lodge & Shipley, q. c. g.

SPECIAL LATHES

No. 3 Lodge & Shipley Rapid Reduction Lathe.
14"x 6' Towsley Speed Lathe.

METAL SAWS

Globe Power Hack Saw, 8" cap.

MISCELLANEOUS MACHINES

One Marion Double Grinder.
One Marion Double Grinder on stand.
One Diamond Combination Grinding and Polishing Stand.
One Sturtevant Blower, Diameter of outlet 24".
Universal Swivel Table for Radial Drill.
Brown & Sharpe Grindstone Frame for 5"x36" Stone.
One Mueller Grindstone Frame for 4"x27" Stone.
One 12"x40" Mumford Molding Machine.
One Ohio Planer, 24"x24"x12' with two heads on cross rail.

The Lodge & Shipley Machine Tool Co.
CINCINNATI, OHIO, U. S. A.

During the dull times incident to the European war, we are taking the opportunity to rearrange and renew our shop equipment. We therefore offer the following machine tools, all in first-class running order:

1-17"x 6' Standard Engine Lathe with compound rest and box turret on carriage.
1-17"x 6' Standard Engine Lathe with compound rest.
1-17"x 6' Standard Engine Lathe with plain rest.
1-17"x 6' Standard Engine Lathe, compound rest interchangeable with turret on carriage.
1-17"x 6' Standard Engine Lathe, 3 Step Cone Friction Double Back Gear.
1-17"x 8' Standard Engine Lathe, 3 Step Cone Friction Double Back Gear.
1-17"x 10' Standard Engine Lathe with compound rest.
1-17"x 12' Standard Engine Lathe with compound rest.
1-24" raised in sand to swing 27 1/4"x 10' Standard Engine Lathe with compound rest.
1-25"x 10' Bradford Engine Lathe with compound rest.
1-28-36"x 14' New Haven Engine Lathe not screw cutting.
2-2"x 24" Jones & Lamson (6 head) Flat Turret Lathes.
1-30"x 30"x 8' S. H. Smith-Silk Planer.
1-36"x 36"x 10' D. H. Pond Planer.
1-42"x 42"x 12' Wheeler Planer, one head.

THE GREAVES-KLUSMAN TOOL CO.,

Cincinnati, Ohio

THE E. L. ESSLEY MACHINERY CO.

555-557 WASHINGTON BLVD CHICAGO
222 GRAND AVE MILWAUKEE

Boring Mills.

- | | |
|---|--|
| 30" Bullard, sw. turret, pl. table, (2). | No. 1 Barrett horiz. cyl. borer. |
| 42" Baush, 1 pl., 1 tur. hd., pl. table, (2). | No. 2 Rochester table type, horizontal boring and drilling machine, new. |
| 51" Niles, 2 heads, plain table. | |
| 60" Baush, 2 heads, plain table, (2). | |

Radial Drills.

- | | |
|-------------------------------|---------------------------------|
| 2' American sensitive radial. | 3 1/2' Baush plain, cone drive. |
| 3' American plain, like new. | 4' Bickford plain, speed box. |

Grinders.

- | | |
|-------------------------------|-------------------------------------|
| No. 6A Bryant, hole and face. | No. 2 Cinti. 12x36 univ., like new. |
| No. 60 Heald, cylinder. | 6x32 Norton, plain, fine shape. |

Hammers.

- | | |
|------------------------------|---|
| 40 lb. Bradley, helve, r. c. | 600 lb. Pratt & Whitney, board drop hammer. |
| 100 lb. Wais & Roos, belted. | |

Lathes.

We offer Engine Lathes in all sizes from 9" to 50". What size and type do you need? Write us.

Milling Machines.

- | | |
|----------------------------|----------------------------------|
| No. 2 LeBlond, plain. | No. 2 Owen, plain, new. |
| No. 2 Kearney & T., plain. | No. 32 Kemp Smith, Lincoln type. |
| No. 3 LeBlond, plain. | No. 3 Owen, univ., new. |

Turret Lathes & Screw Machines.

- | | |
|--|------------------------------------|
| 16" Drees, universal, (brass). | 3" Garvin, w. f. & a. c. |
| 13" Gisholt, turret, style G. | 1 1/2" Foster-K., w. f. & a. c. |
| 7-16" No. 1 P. & W., w. f. & a. c., (2). | 1 1/2" Cleveland auto., late type. |
| 1 1/2" P. & W., w. f. & a. c., (3). | 1 1/2" Cleveland auto., late type. |

We have just purchased a factory making brass valves and have a large number of Brass Turret Lathes to offer. Let us know your requirements; we can probably meet them.

Miscellaneous.

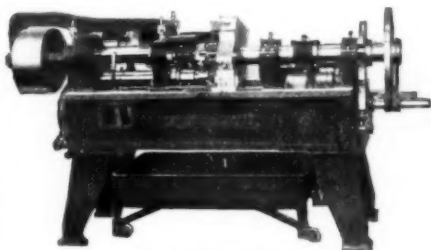
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|---|---|
| Bar saw, 6 1/2" Smith & P., new. | Planer, 21"x18"x4 1/2' Putnam. |
| Bending roll, 6" Niles. | Planer, 40"x36"x12' New Haven. |
| Bolt cutter, 1 1/2" Merriam. | Pulley lathe, 26" Stevens. |
| Bolt cutter, double, 1 1/2" Acme. | Pulley lathe, 30" Streit. |
| Broaching mche., No. 3A Lapointe. | Punch p., Nos. 1, 2 & 4 Rockf'd, o.b.i. |
| Bulldozer, No. 1 W.-White. | Punch presses, 119 Crosby, o.b.i., (2). |
| Centering mche., 2-sp. Pratt & W. | Punch & s., dbl., 1"x1" 17D New Doty |
| Gear cutters, 26x8" No. 3 B. & S., (2). | Punch and s., sgl., 1"x1" No. 2 Cin. |
| Gear and p. cutter, Slate auto. | Rotary shear, 6" Lenox, 1" cap. |
| Gear hobbors, 12" Adams-F., (4). | Saw, No. 14 Higley, motor drive. |
| Gear cutter, No. 3 Adams, like new. | Saw table, universal, Baker. |
| Gear hobbors, 12" Reynolds, (2). | Shaper, 20" Kelley, s. g. |
| Gear hobber, No. 2 Rhenania, new. | Shear, pwr. squaring, Niagara, 14 ga. |
| Keyseater, 18" Morton. | Sprocket b. & t. mche., Baker. |
| Mitering mche., No. 5 Fox. | Wire s. & c.o.mch., 3-16"x4' Adt new |
| Oil separator, Reed & Curtis. | Wire s. & c.o.mch., 3-16"x10' Shuster. |

If you don't see the tool that you need listed, that is no sign that we don't have it. Write for quotations on your requirements, and see what we can offer.

An Operator on a "New Britain" Automatic

**Saves his concern from two
to four times his own wages**

This applies to our single head machine, for machining one end of castings, forgings and second operation rod work, and is compared with the three to five times greater cost of production on the hand turret lathe. By taking care of two Automatics, he saves from four to eight times his own wages; and with our double head type machines this can be multiplied by two again.



Single Head Type

"New Britain" Automatics are chucking machines, made in several sizes, with four to eight spindles, single or double head. They drill, face, tap, thread, etc., at one chucking, in the time of the longest single operation.

Every movement is automatic, excepting the mere matter of loading and unloading, and that is done while the machine is in operation—provided for by an extra chucking section.

*Write for handsome catalog, and send sample
for production estimate on your own work.*

The New Britain Machine Co.
60 Chestnut St., New Britain, Conn.

